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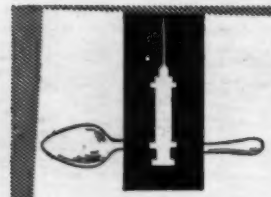

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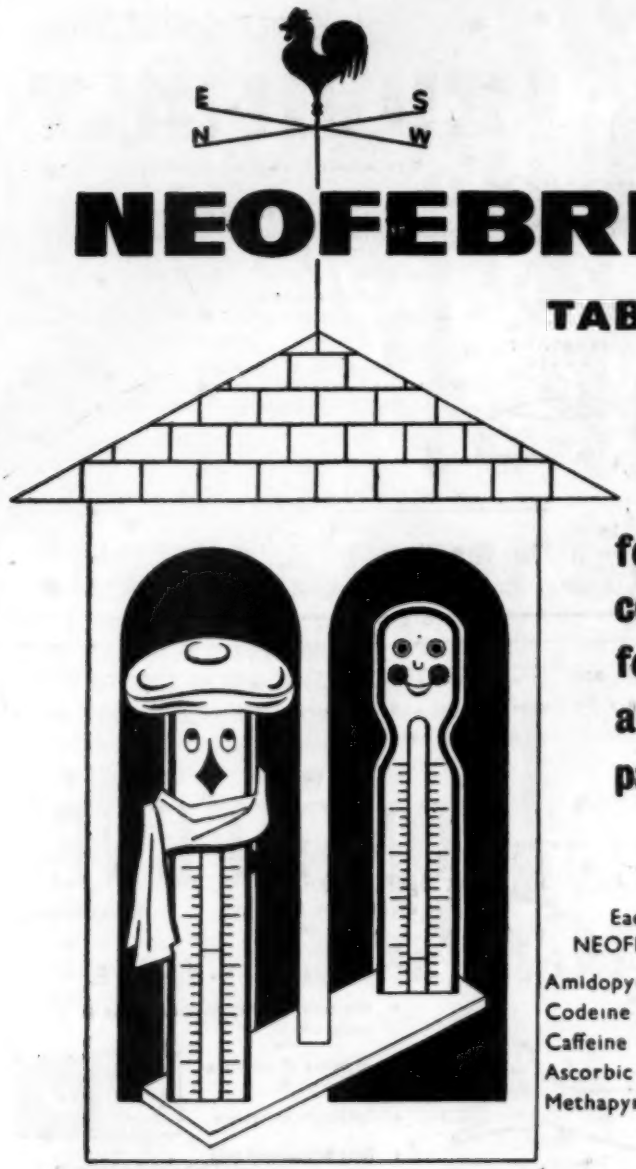

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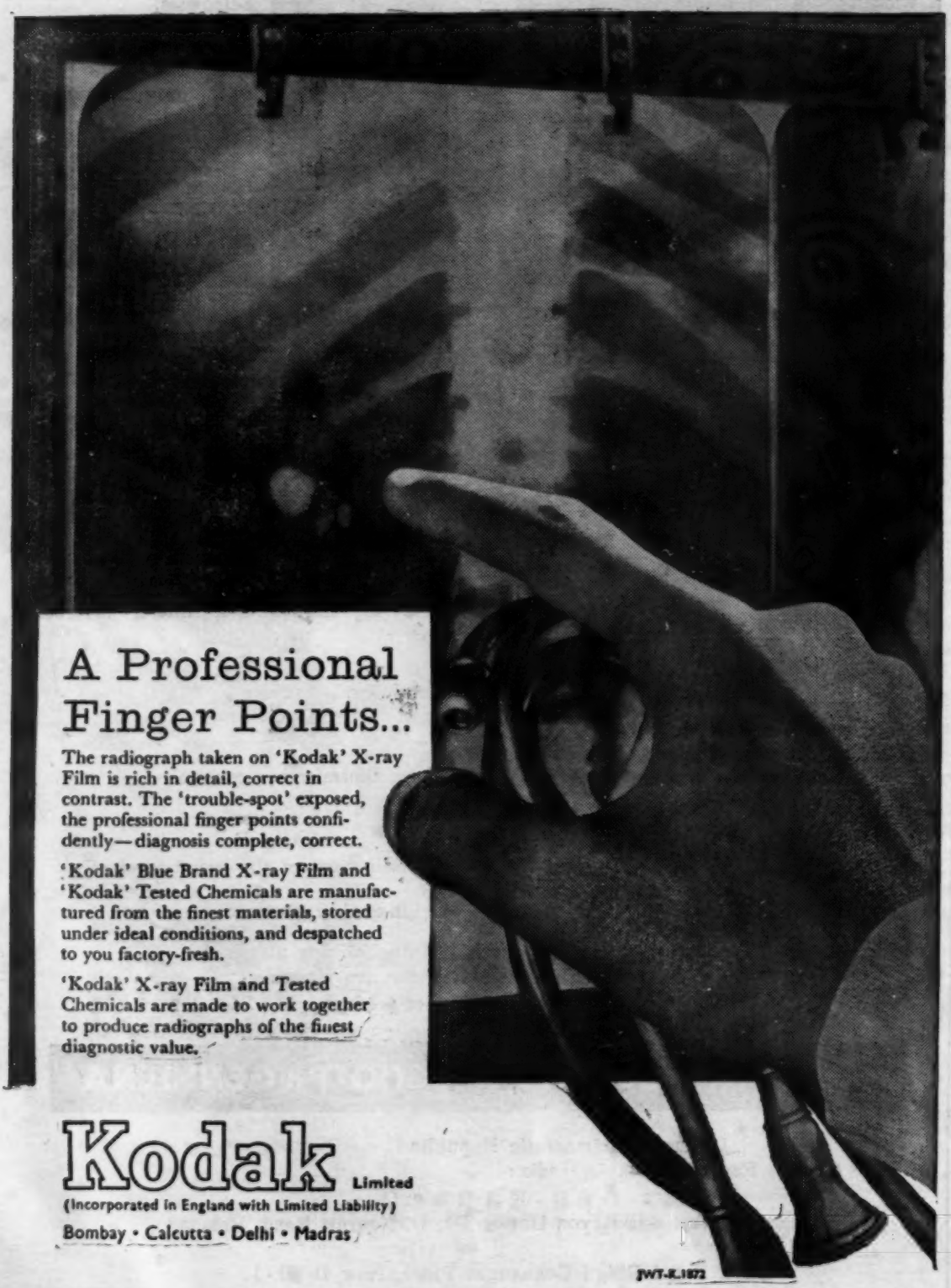

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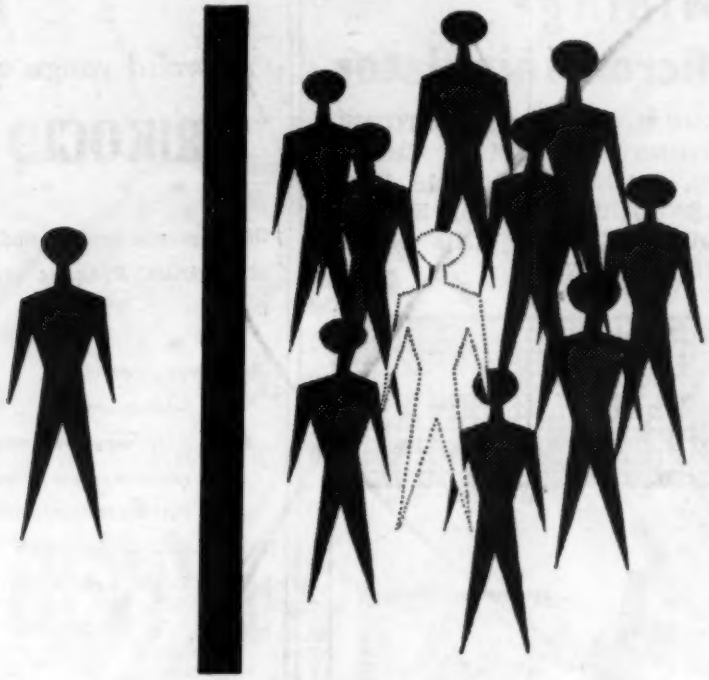

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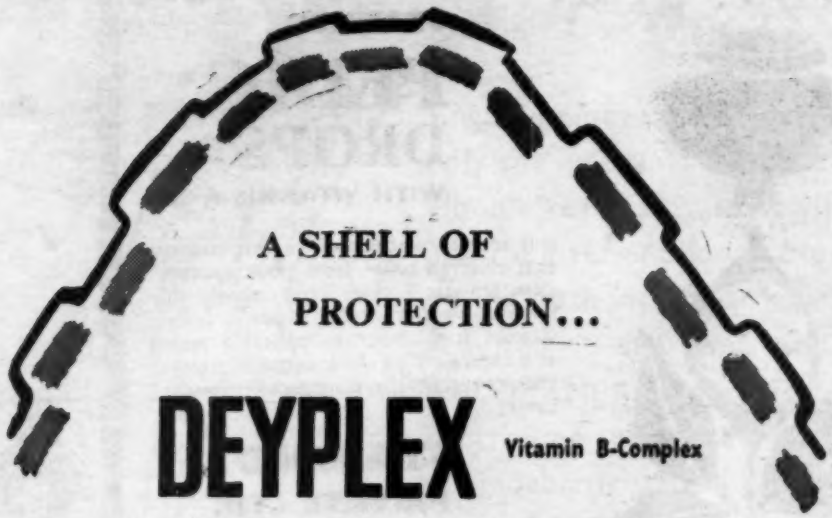

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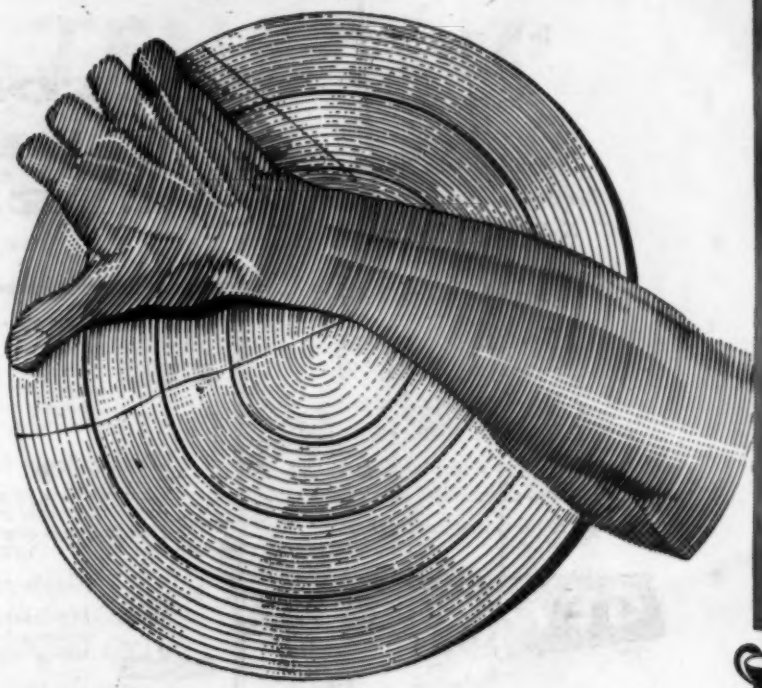

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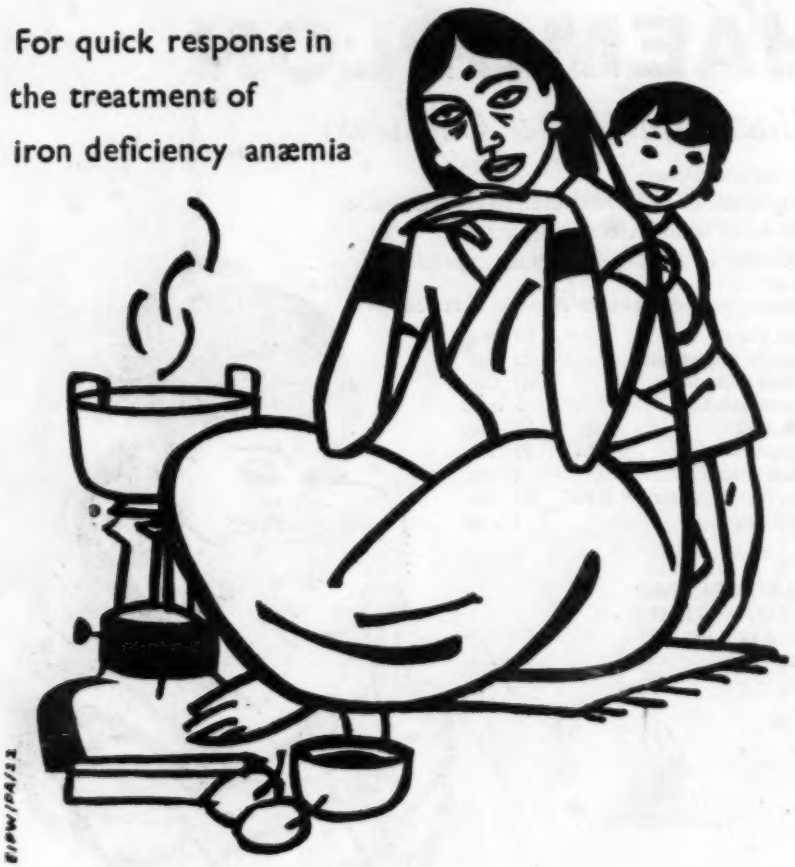

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ORIGINAL ARTICLES

STUDIES ON TRANSFUSION REACTIONS

Influence of Storage on Transfusion Reactions

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Advances in immunohaematology, improved techniques of collection, preservation, transfusion of blood and preparation of apyrogenic chemicals, solutions, apparatus, etc., have received considerable attention during the last twenty years and have gone a long way in reducing the incidence of transfusion reactions (De Gowin and Hardin, 1940 ; Knott and Leibel, 1941 ; Co Tui and Wright, 1942 ; Handfield-Jones and Lewis, 1952 ; Davidsohn, 1954 ; Wall, 1956 ; and Mollison *et al*, 1957). Despite the tremendous advances made in the technique and the universal use of blood as a therapeutic measure, the problems associated with transfusion still remain unsolved. The incidence of posttransfusion reactions, even in the best of hands, has been found to be 2 to 4 per cent (De Gowin *et al*, 1949 ; Engelfried, 1954 ; Wintrobe, 1956) and the exact nature and mechanism of some of these reactions still remain unexplained (Brittingham and Chaplin, 1957).

During the course of the present study 6,264 transfusions of whole blood supplied by the State Blood Bank, Uttar Pradesh, Lucknow, to various hospitals were investigated. The effects of storage of blood, speed of transfusion, prophylactic use of antihistaminics and calcium, nature and severity of disease of recipient, bacterial contamination, transmission of serum hepatitis and other allied factors were studied to elucidate their relative role on transfusion reactions. The present paper deals with the influence of storage of blood in modifying the nature and frequency of transfusion reactions.

MATERIALS AND METHODS

Equipment for the collection and transfusion of blood was prepared locally at the blood bank. Complete aseptic precautions were taken for collection of blood. Throughout the period of collection the bottles were gently rotated to prevent formation of blood clots. Blood was collected in preformed vacuum bottles by closed technique. Each bottle contained 350 ml. blood

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with 100 ml. anticoagulant solution. Two types of anticoagulants were used. During the first two series, 3 per cent solution of sodium citrate was used. Acid citrate dextrose (ACD) solution was used in the later studies. This solution consisted of :

Acid citric	...	0·43 g.
Trisodium citrate	...	1·32 g.
Dextrose	...	1·47 g.
Pyrogen-free distilled water	...	100 ml.

AnalaR chemicals obtained from British Drug House were used for the preparation of ACD solutions. Bottles containing ACD solution were prechilled. Immediately after collection the blood was stored at 4°C.

With the exception of a few instances, the group and Rh type of the transfused blood was the same as those of the recipient. Cross matching tests were performed in accordance with the technique recommended by Wall (1952). Coomb's compatibility test was done in all cases classified as 'dangerous recipients' according to the technique recommended by the American Association of Blood Banks (1956).

The recipients of blood were subjected to clinical and laboratory investigations before, during and after blood transfusion for observing clinical variations in the state of the patients. Half-hourly record of pulse, respiration and temperature was maintained during the course of transfusion and three-hourly during the post-transfusion phase.

Observations

Transfusion reactions observed in the present series have been classified in the following manner :

1. *Febrile reactions* (including pyrogenic, bacterial, non-haemolytic and non-specific reactions) varied in severity, e.g., (a) minor, with a rise of temperature by 2°F., (b) moderate, with a rise of temperature by 2° to 4°F associated with chill and body aches ; and (c) severe, with febrile reactions showing a rise of temperature beyond 4°F. Rise in temperature less than 4°F but associated with symptoms like rigor, headache, vomiting, tachycardia, restlessness and sense of oppression was also considered as severe reaction.

2. *Allergic reactions* characterised by urticaria, joint pains, dyspnoea and angioneurotic oedema.

3. *Cardiovascular accidents* like circulatory overload and embolism.

4. *Haemolytic reactions* characterised by severe rigor, backache, dyspnoea, cyanosis, sense of constriction of chest, haemoglobinuria, and ultimately terminating in profound shock.

5. *Delayed reactions* like transmission of viral hepatitis, etc.

In our first series observations were made on 302 transfusions (Table 1). Of these, 107 were carried out with fresh blood collected and transfused on the same day. Over 80 per cent of these were transfused within four to six hours of collection. In 193 cases blood stored for a period varying from 1 to 7 days was used, while in two emergency cases blood stored for more than 7 days was transfused. Sodium citrate (3 per cent) was used as an anticoagulant.

Table 1—Showing Nature and Incidence of Reactions following Transfusion of Blood Stored for Different Periods (1st Series of 302 Cases)

Period of storage (days)	Total No. of cases	Reactions						
		Febrile			Allergic	Others	Total	%
		Minor	Moderate	Severe				
Fresh	107	15	6	11	2	3	37	34·58
1	89	10	8	13	1	3	35	
2	44	6	3	8	2	—	19	
3	27	3	3	6	—	1	13	
4	14	1	1	2	—	—	4	
5	11	1	—	3	—	—	4	40·00
6	6	—	—	1	—	—	1	
7	2	—	1	1	—	—	2	
13	1	—	—	—	—	—	—	
14	1	—	—	—	—	—	—	
Total	302	36	22	45	5	7	115	37·08

In this series the conditions of cold storage of blood in the hospital and during transit were not properly observed. Hospital refrigerators when inspected on a number of occasions showed that the desired temperature (4-6°C) was not being maintained constantly. Besides, unused bottles of blood from various units of hospital were received back for reissue. With fresh blood, reactions of all types occurred in 37 out of 107 transfusions (about 35 per cent) whereas with 195 transfusions of stored blood the reaction rate was 40 per cent.

Later the conditions of storage and transport of blood were properly controlled and in the second series of cases frequency of reactions with fresh and stored blood was not very different (Table 2). With 43 transfusions of fresh blood the frequency of all types of reactions was 25·58 per cent and with 171 transfusions of stored blood for a period of 1 to 10 days it was 25·73 per cent. Three per cent sodium citrate was used as anticoagulant.

Twenty two per cent of total febrile reactions were severe in nature in this series as compared to 43·69 per cent in the first series when the conditions of storage were not properly maintained.

In the third series of 5,748 cases ACD solution was used as an anticoagulant and the period of storage was increased up to 21 days. Majority of the blood bottles were, however, used up within 7 days. During this period the storage conditions at the Blood Bank and in the various units of the hospital were identical and better check was exercised on the maintenance of hospital refrigerators. Certified chemically pure and pyrogen-free chemicals were used during this period and strict precautions were taken for the elimination of pyrogens during the process of manufacture of donor and recipient sets and preparation of solutions. In this series an incidence of 6·58 per cent reactions among 1,503 transfusions of fresh blood and 6·71 per cent reactions among 4,245 transfusions of stored blood were observed (Table 3).

With proper precautions in the manufacture of equipment, and preparation of solutions in the third series of cases, the frequency of all types of reactions showed a marked decline. The reaction rate dropped to 6·68 per cent as compared to 35 per cent of the first series and 25·6 per cent in the second. The frequency of severe febrile reactions decreased still further during this period and a considerable percentage of febrile reactions were minor in nature. Only one case of haemolytic transfusion reaction was observed during this period. This happened due to a clerical error in the ward when a patient of group "O" received a bottle of group 'B' blood sent for another patient of the same ward. The cause of this reaction was not in any way associated with storage or preservation of blood.

The preparation of anticoagulant solutions and the manufacture of entire apparatus for collection and administratiron of blood were performed under identical conditions in each series of cases. The nature and frequency of transfusion reactions in the three series of cases is shown in Fig. 1.

TABLE 2—SHOWING NATURE AND INCIDENCE OF REACTIONS FOLLOWING TRANSFUSION OF BLOOD UNDER CONTROLLED CONDITIONS FOR DIFFERENT PERIODS WITH SODIUM CITRATE SOLUTION AS ANTICOAGULANT (2ND SERIES OF 214 CASES)

Period of storage (days)	Total No. of cases	REACTIONS						
		Febrile			Allergic	Others	Total	%
		Minor	Moderate	Severe				
Fresh	43	1	6	3	—	1	11	25·58
1	47	7	4	2	2	—	15	
2	41	1	6	1	1	—	9	
3	37	4	9	3	1	—	17	
4	21	—	1	2	—	—	3	
5	13	—	—	—	—	—	—	
6	5	—	—	—	—	—	—	25·73
7	1	—	—	—	—	—	—	
8	2	—	—	—	—	—	—	
9	3	—	—	—	—	—	—	
10	1	—	—	—	—	—	—	
Total ...	214	13	26	11	4	1	55	25·71

TABLE 3—SHOWING NATURE AND INCIDENCE OF REACTIONS FOLLOWING TRANSFUSION OF BLOOD UNDER CONTROLLED CONDITIONS FOR DIFFERENT PERIODS WITH ACD SOLUTION AS ANTICOAGULANT (3RD SERIES OF 5748 CASES)

Period of storage (days)	Total No. of cases	REACTIONS						
		Febrile			Allergic	Others	Total	%
		Minor	Moderate	Severe				
Fresh	1503	55	24	8	10	2	99	6·58
1	1422	67	18	5	6	—	96	
2	976	44	13	5	5	1	68	
3	479	18	8	6	1	—	33	
4	398	21	5	1	2	—	29	
5	300	18	5	—	1	—	24	
6	161	7	2	—	—	—	9	
7	102	3	4	—	1	—	8	
8	90	3	3	—	—	—	6	
9	68	3	3	—	—	—	6	
10	13	1	—	—	—	—	1	6.71
11	11	—	—	—	—	—	—	
12	20	2	—	—	—	—	2	
13	7	1	—	—	—	—	1	
14	4	—	—	—	—	—	—	
15	5	1	—	—	—	—	1	
16	4	1	—	—	—	—	1	
17	1	—	—	—	—	—	—	
19	2	—	—	—	—	—	—	
21	2	—	—	—	—	—	—	
Total ...	5748	245	85	25	26	3	384	6·68

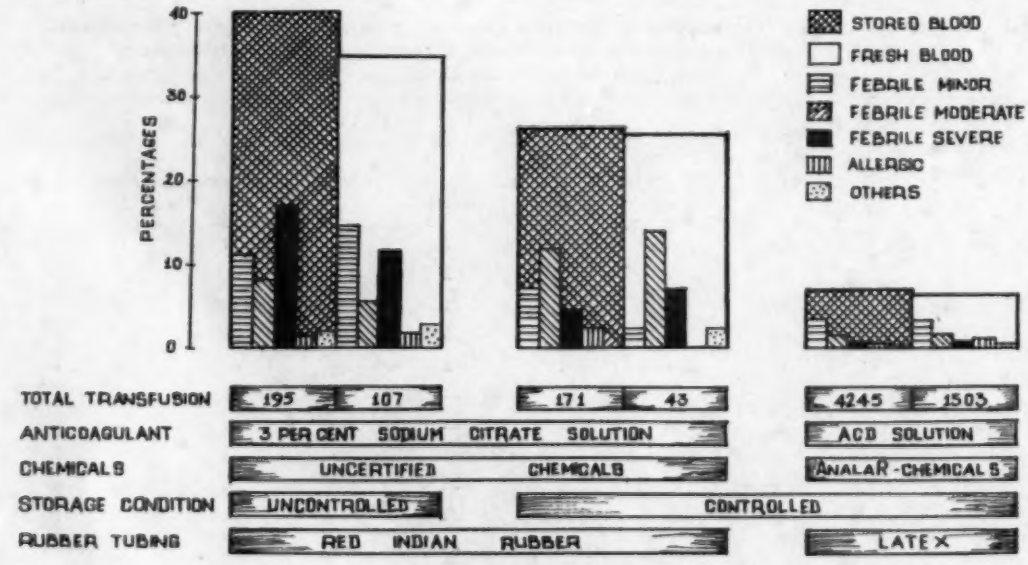

FIG. 1—SHOWING INFLUENCE OF STORAGE ON TRANSFUSION REACTIONS

Discussion

The present investigation showed that under properly controlled storage conditions the period of storage of blood varying from 1 to 10 days with sodium citrate solution and 1 to 21 days with ACD solution did not have any influence on the nature and frequency of transfusion reactions. The technique of manufacture of equipment, preparation of solutions, and improper or inadequate storage conditions led to high frequency of reactions (35 per cent with fresh and 40 per cent with stored blood).

Other workers also did not find any effect of period of storage (1 to 10 days for sodium citrate solution and 1 to 21 days for ACD solution) of blood *per se* on transfusion reactions (De Gowin and Hardin, 1945). Increase in the incidence of transfusion reactions with stored blood has been reported by several workers. Fantus *et al* (1938) and Napier and Das Gupta (1941) observed increasing number of reactions with stored blood and found them to be more severe in nature than those with fresh blood. These authors, however, did not discuss the significance of proper conditions of storage in modifying the reactions. De Bakey and Honold (1939), Grewal and Chandra (1940), on the other hand found stored blood to be superior as compared to fresh blood so far as allergic reactions were concered. Muether and Andrews (1941) also observed a lower incidence of chills following transfusion of stored blood.

Our observations, did not reveal any superiority of stored blood over fresh blood either in lowering the number of allergic reactions or the incidence of chills.

Storage may increase the chances of bacterial contamination and growth (De Gowin *et al*, 1949 ; Mc.Entegart, 1956 ; Mollison *et al*, 1957). In the present series the identical patterns of post transfusion reactions with fresh and stored blood indicated that bacterial contamination did not play any significant role under proper conditions of storage and transfusion.

Anticoagulants used for the storage and preservation also exert considerable influence during the process of storage and transfusion of blood. The toxicity of large doses of citrate is well known (Kilduffe and De Bakey, 1942 ; Keynes, 1949 ; Hejhal and Firt, 1954). Rapid administration of citrated blood can occasionally lead to citric acid intoxication. The ill effects are secondary to binding of ionised calcium in the blood stream with depression of myocardium and possible retardation of clotting mechanism (Hejhal and Firt, 1954). Under conditions of our observations the use of citrate or ACD solution did not materially affect the rate of transfusion reaction. Red cell preservation is essentially a problem of maintaining viability of the living tissue *in vitro*. The general objectives in this undertaking are in the main to expose the erythrocytes to nothing of a harmful nature during collection and storage, to reduce metabolic requirements as much as possible by lowering temperature, and to provide supplements which will support metabolism of the erythrocytes.

The erythrocyte *in vitro* chiefly relies upon carbohydrate metabolism as a source of energy. Impaired glucose utilisation results in loss of viability of the cell. Attention has thus been focused on the metabolic scheme in considering the storage of blood in acid-citrate-dextrose solution at 4°C.

Many changes like alterations in shape, in osmotic and mechanical fragilities in electrolytic composition, in glucose utilisation, and in the loss of viability by the red cell, occur during the process of storage of blood. It is beyond the scope of this paper to review these changes but the effect of any one or each one of these on the recipient may influence the nature and frequency of transfusion reaction in some way. This study has brought to focus the complex nature of the problem of haemotherapy and the multiplicity of factors involved in modifying the nature of transfusion reactions. A large number of variables are to be taken into consideration and the difficulty of assessing the role of any one factor is obvious. We have also to appreciate that while a large number of individual factors are avoidable, a combination of one or more of these minor factors may produce undesireable transfusion reactions.

Summary

1. The influence of storage and preservation of blood was studied during the course of transfusions of fresh blood and stored blood.

2. Two types of anticoagulant solutions were used. In one group three per cent sodium citrate solution and in another ACD solution.

3. The period of storage varied from one to twenty-one days. Blood collected in sodium citrate solution was stored up to 10 days and in ACD solution up to 21 days.

4. With proper conditions of storage and transit the frequency of reactions with 1,503 transfusions of fresh blood and 4,245 transfusions of

preserved blood was of the same order (6·58 and 6·71 per cent respectively). Bank blood did not seem to have any influence on the nature and incidence of transfusion reactions under properly controlled storage conditions.

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CLINICAL EXPERIENCE WITH CHLORPROPAMIDE IN THE TREATMENT OF DIABETES MELLITUS

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Oral treatment of diabetic patients has gained considerable interest since the discovery of hypoglycaemic effects of sulphonylureas. One of these compounds, namely, chlorpropamide [1 – (p-Chlorobenzenesulphonyl) – 3 – n – propylurea] has been reported as a potent hypoglycaemic agent superior to its predecessors. There has, however, been only a few references (Mukherjee *et al*, 1960; Patel *et al*, 1960; Tulpule and Vakil, 1960; Mody, 1961.) on its efficacy in Indian diabetics. The behaviour of the disease and its response to a particular form of treatment are believed to vary in different parts of the world. In view of this we are reporting our experiences with this drug on 30 unselected Indian patients studied over a period of one year.

The subjects included in this series formed an unselected group of diabetic patients without ketonuria. The family history, age at which the disease was first detected and the therapy taken previously with their effects were carefully recorded in each case. Presence of complications was searched for clinically and with laboratory aids whenever necessary. Fasting blood sugar was estimated by the method of Folin and Wu before therapy was started and repeated at weekly intervals or more frequently depending upon the need of individual cases. Glucose tolerance test was done before and after control was achieved in a sizeable number of patients. Urinalysis was done twice daily, in the morning and in the evening, by Benedict's method (5 ml. of Benedict's solution and 8 drops of urine boiled for 2 minutes) and the result read on the basis of colour change from trace (0·1—0·2 per cent sugar) to four plus (+ + + +, indicating more than 2 per cent sugar). Other routine investigations, viz., haemogram, blood cholesterol as well as liver function tests including serum bilirubin, urine urobilinogen,

alkaline phosphatase and plasma proteins were done in each case and repeated when considered necessary. All the patients received diabetic diet calculated on the basis of 25 calories per Kg. body weight but not exceeding 1,800 calories per day, during the period of control. Daily protein ration allowed was 1 g. per Kg. body weight, fat allowance was 70 g. per day and the rest of the calories were made up with carbohydrate.

Analysis of Materials

There were 22 males and 8 females. Seven patients were below 40 years of age, the youngest being a 20 year old female, a diabetic for 2 years, and the oldest a 72 year old male who had previously received insulin and tolbutamide irregularly. Nine of the patients belonged to the obese type of diabetes. Only six patients gave history of the disease in the family. Diabetes was known to be present for 1 to 5 years in 15 cases, 6 to 10 years in 4 cases and more than 10 years in 2 cases. These were 9 patients in the series in whom the disease was of very recent origin (less than 1 year).

Complications were noticed in one or more systems in 14 patients ; neuropathy in 8, nephropathy in 2, retinopathy in 4, lental opacity in 4, pulmonary tuberculosis in 1 and hypertension in 1. In two patients hypothyroidism was associated with the disease. Diabetic amyotrophy involving the proximal muscles of the right thigh was found in one case.

In 13 patients fasting blood sugar was less than 200 mg./100 ml. ; in others the value was more than 200 mg./100 ml. ; the highest being 451 mg./100 ml. Six patients had fasting sugar value above 300 mg./100 ml. Urinalysis showed trace of sugar in 1, one plus (0·2 to 0·5 per cent) in 6, two plus (0·5 to 1 per cent) in 5, three plus (1 to 2 per cent) in 10 and four plus (more than 2 per cent) in 4 patients. Four patients were aglycosuric and in these cases blood sugar was less than 180 mg./100 ml. Glucose tolerance test was done in 8 patients before and after the therapy. It was considered unnecessary in most cases for the purpose of evaluating the efficacy of the therapy and control of the disease, for the fasting blood sugar and urinalysis served the purpose very well.

Seventeen patients had previously received therapy. Table 1 gives the nature of the therapy and the result.

Table 1—Showing the Drug Used and the Result Obtained

Nature of therapy	No. of patients	Result (No. of cases)		
		Good	Poor	Unknown
Insulin ...	8	5	3	0
Tolbutamide ...	5	2	3	0
Insulin+Tolbutamide	3	0	2	1
Carbutamide ...	1	0	1	0

The three patients with poor response to insulin had taken insulin very irregularly. The largest dose of insulin which was taken by one patient was 52 units of soluble insulin daily. Most of the patients taking tolbutamide previously had taken it in doses of 1 to 1·5 g. daily.

Chlorpropamide Therapy and Result

The dose of chlorpropamide used in this series never exceeded 500 mg. a day. Except in 4 cases, the following criteria were used for selecting the particular dosage at the beginning of the therapy.

(1) 500 mg. daily for patients with

  (a) fasting blood sugar 200 mg./100 ml. or more.

  (b) fasting blood sugar 150-200 mg./100 ml., when insulin treatment had been received previously.

(2) 250 mg. daily for all other cases.

The drug was given in the morning after breakfast as a single dose. 14 patients received 250 mg./day ; 14 received 500 mg./day and 2 had 375 mg./day to start with. Once control was achieved all patients were switched on to maintenance therapy (*vide infra*).

Table 2 summarises the relevant data of all the 30 cases with their response to chlorpropamide therapy. The efficacy of the therapy was determined by fasting blood sugar and urinalysis during the course of treatment. Response was

TABLE 2—SHOWING SUMMARY OF 30 CASES OF DIABETES MELLITUS TREATED WITH CHLORPROPAMIDE

Serial No.	Age & sex	Duration (years)	Previous therapy	Chlorpropamide (mg. daily)	Before therapy: Fasting blood sugar (mg.%)	Before therapy: Urine sugar	After therapy: Fasting blood sugar (mg.%)	After therapy: Urine sugar	Control: Type	Control: Time taken (weeks)	Side effect	Remarks
1.	63 M	11	—	250	156	++	110	–	Good	4	Giddiness, weakness	
2.	55 F	2	I	375	384	+++	160	–	Indefinite	2	–	Did not report for follow up after 2 weeks
3.	27 M	Recent	—	250	252	+++	120	–	Fair	5	–	
4.	51 M	Recent	—	250	185	+++	98	–	Good	1	–	
5.	56 M	3	—	250	220	+	110	–	Good	2	–	
6.	50 M	2	—	250	178	+	92	–	Good	1	–	
7.	20 F	2	I	375	207	++	228	++	Poor	–	–	Observed for 4 weeks
8.	30 F	Recent	—	500	451	++++	130	–	Fair	12	Weakness	Did not adhere to diet rigidly
9.	48 F	Recent	—	250	176	–	104	–	Good	1	–	
10.	49 M	2	T	250	183	Trace	110	–	Good	3	–	
11.	52 M	2	I	250	143	–	97	–	Good	2	Dizziness	
12.	40 M	5	T	250	140	+++	114	–	Fair	3	Dizziness, weakness	
13.	43 M	Recent	—	250	146	–	95	–	Good	2	–	
14.	51 M	6	I	500	180	+++	161	++	Foor	–	–	Observed for 16 weeks
15.	50 M	3	I & T	500	356	+++	88	–	Good	9	–	Did not adhere to diet rigidly
16.	40 M	5	T	500	151	+	120	–	Fair	1	–	
17.	60 M	Recent	—	250	222	++++	110	–	Good	3	–	
18.	34 F	6	C	500	200	+	110	–	Good	2	Weakness, giddiness	
19.	60 F	1	T	250	140	+	116	–	Fair	1	–	
20.	72 M	5	I & T	500	210	++	122	–	Fair	3	–	Did not adhere to diet rigidly
21.	30 F	3	I	500	350	+++	110	–	Good	3	–	
22.	52 M	10	I	250	165	–	110	–	Good	1	–	
23.	51 M	Recent	—	250	186	++	110	–	Good	2	–	
24.	50 F	2	I	500	230	+++	160	++	Poor	–	–	Observed for 5 weeks. Did not adhere to diet rigidly
25.	61 M	4	T	500	214	+	127	–	Fair	3	–	
26.	62 M	22	I	500	244	++	80	–	Good	1	–	
27.	33 M	Recent	—	500	450	++++	80	–	Good	7	–	
28.	39 M	Recent	—	500	317	+++	108	–	Good	4	–	
29.	57 M	2	—	500	280	Trace	120	–	Fair	2	–	
30	67 M	10	I & T	500	210	+++	170	++	Poor	–	–	Observed for 3 weeks. Did not adhere to diet rigidly

M=Male; F=Female; I=Insulin; T=Tolbutamide; C=Carbutamide; –=Nil.

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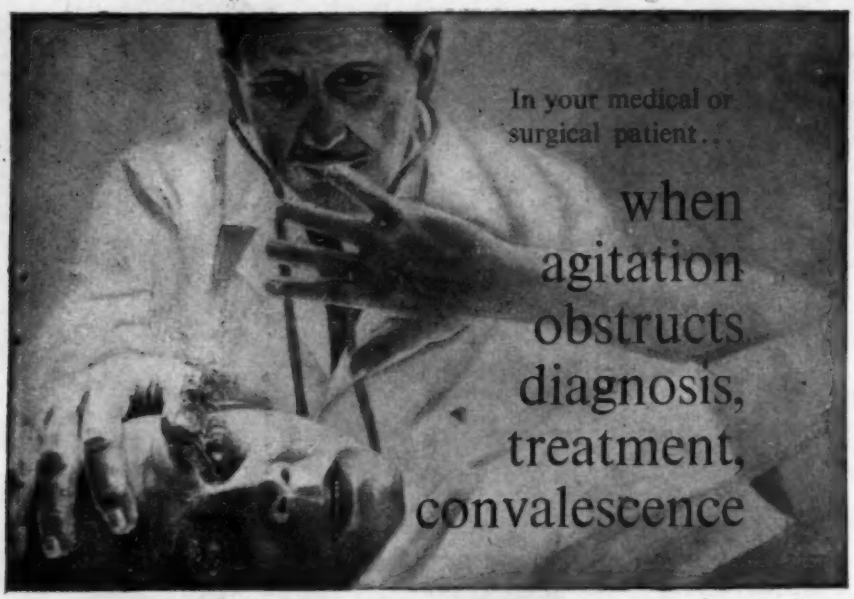

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considered as good, fair or poor on the following criteria (Table 3).

TABLE 3—SHOWING THE CRITERIA FOR DETERMINING THE RESPONSE TO THE DRUG

Response	Fasting blood sugar	Urine	No. of cases
Good ...	110 mg./100 ml., or less	Aglycosuria ...	18
Fair ...	Between 110-130 mg./100 ml.	—do— ...	7
Poor ...	Others	± ...	4
Indefinite ...	—	— ...	1

Eighteen patients (15 males, 3 females) achieved good control, seven achieved fair control, while the result was considered poor in four. One of the cases with poor response was a female juvenile diabetic, the youngest in the series (20 years) and the other three did not faithfully adhere to prescribed diet. The result was indefinite in one. Most of the patients who were controlled belonged to the late onset type of the disease. Three patients had the disease for 10 years or more. Most of these patients were above 40 years of age—only six being below 40 years, and the youngest was a 27 year old male. The time taken to achieve control has been shown in Table 4.

TABLE 4—SHOWING THE TIME REQUIRED TO ACHIEVE CONTROL

Time in weeks	1	2	3	4	5	7	9	12
No. of cases ...	7	6	6	2	1	1	1	1

It was invariably found that non-adherence to the prescribed diet was a common factor in all those cases where control took 4 weeks or more. Patients who adhered to the prescribed diet faithfully reached control sooner.

One of the 3 patients with poor response to insulin was satisfactorily controlled within 3 weeks with 500 mg. of chlorpropamide daily; the response was poor in the second and indefinite in the third. Amongst the five patients who had previously responded well to insulin, 3 were satisfactorily controlled with chlorpropamide within two weeks, all of them males with duration of illness varying between 2 to 22 years; the fourth patient, a female juvenile diabetic, failed to respond and in the fifth patient the response was poor.

All the 3 tolbutamide failure cases responded to chlorpropamide, the control being achieved within 1 week in 2 cases and within 3 weeks in 1 case. The nature of control was good in one and fair in two cases. The dose of chlorpropamide used was 500 mg. daily in one patient and 250 mg. daily in two other patients The solitary carbutamide failure case was also controlled with chlorpropamide in 500 mg. daily dose in 2 weeks. Of the 3 patients who had previously taken insulin and tolbutamide without proper control, two responded to 500 mg. of chlorpropamide, one after 9 weeks and the other after 3 weeks—control being good in the first and fair in the latter. Nonadherence to prescribed diet was responsible in the first case for the greater time taken to achieve control and it may as well be the reason why insulin and tolbutamide had failed in this case previously.

Presence of complications like nephropathy, retinopathy or neuropathy did not seem to affect the result adversely, good or fair control being achieved in all these cases within reasonable periods of time as in uncomplicated patients. One elderly man with pulmonary tuberculosis was also effectively controlled. Two patients with associated hypothyroidism responded well.

SIDE-EFFECTS

Very few side-effects were noticed in this series. Weakness and giddiness were complained of by 5 patients, but these were not related to the amount of chlorpropamide used.

MAINTENANCE THERAPY

After control was achieved in each case we decided to work out a schedule that would maintain the controlled stage with a minimum quantity of the drug given at optimum intervals. It is well known that when chlorpropamide is given daily a 'fastigium' blood level is reached in 4 to 7 days and that it takes 3 to 5 days for this to fall below the effective level when the drug is withdrawn (Fuleihan and Plimpton, 1959). Accordingly we timed the following schedules after control:

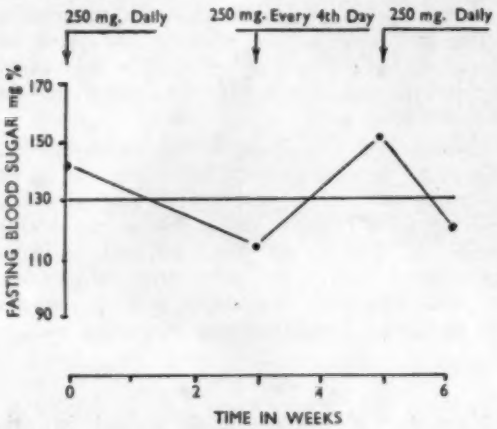
(a) 250 mg. of chlorpropamide, every fourth day.

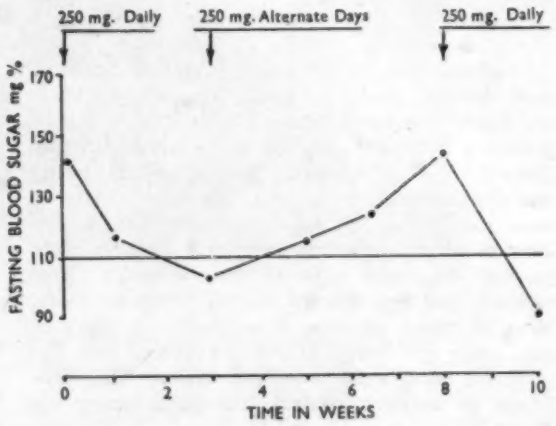
(b) 250 mg. of chlorpropamide, every alternate day.

(c) 100-125 mg. of chlorpropamide daily in those patients who were earlier controlled with 250 mg. daily.

(d) 250 mg. of chlorpropamide daily.

Of 30 cases in this series, 20 patients were thus *followed up for variable periods—the longest being 27 weeks.* Figs. 1, 2, 3 and 4 depict the fasting blood sugar changes week by week on different dosage schedules, the horizontal lines at blood sugar levels 130 mg. per cent and 110 mg. per cent indicating the nature of control, 'fair' and 'good' respectively. It is obvious that dosage schedules (a) (b) and (c) given above failed to maintain the control and that control was lost sooner when the frequency of administration was at longer intervals (every 4th day) than when it was at shorter intervals (alternate days). The daily administration of 250 mg. chlorpropamide appears to be the best form of maintenance therapy. Twenty-two satisfactory response cases in the series were maintained with 250 mg. of chlorpropamide daily. Only one 'fair response' case needed 500 mg., while another was well maintained with 100 mg. daily. One hypothyroid diabetic was controlled with 250 mg. daily and continued to maintain the control without the drug for 8 weeks, but he did not report later on. None of the patients developed hypoglycaemic symptoms during maintenance therapy.





FIGS. 1 AND 2—SHOWING THAT 250 MG. OF CHLORPROPAMIDE EVERY 4TH DAY AND 250 MG. ON ALTERNATE DAYS ARE INADEQUATE TO MAINTAN CONTROL.

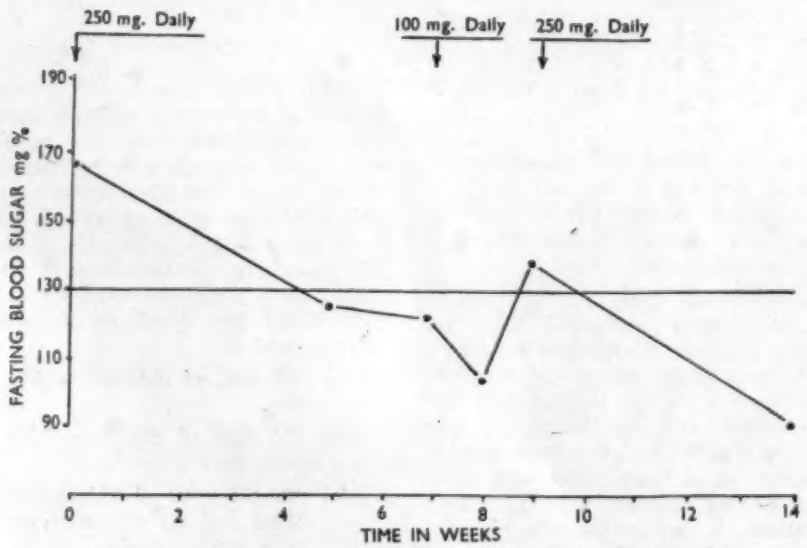


FIG. 3—SHOWING THAT 100 MG. OF CHLORPROPAMIDE DAILY IS ALSO INADEQUATE FOR THE PURPOSE OF MAINTAINING CONTROL.

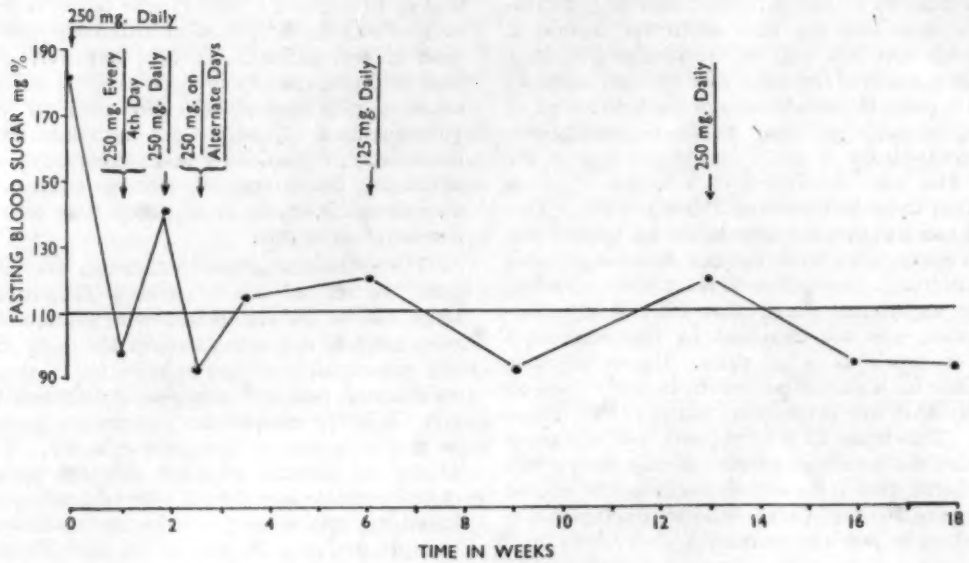


FIG. 4—SHOWING THE EFFECT OF DIFFERENT DOSAGE OF CHLORPROPAMIDE AT VARYING INTERVALS ON THE SAME PATIENT; ONLY WITH DOSAGE OF 250 MG. DAILY THE CONTROL IS MAINTAINED. CONTROL IS LOST SOONER WHEN THE DRUG IS GIVEN AT LONGER INTERVALS.

DISCUSSION AND CONCLUSION

In the present series thirty unselected diabetics received chlorpropamide therapy. Twenty-five (83·3 per cent) of them were successfully controlled. Good control was achieved in 18 cases (60 per cent) and fair control in 7 cases (23·3 per cent). In previous communications on the efficacy of chlorpropamide on Indian diabetics, Patel *et al* (1960) reported successful response in 92 per cent in a series of 26 patients; Tulpule and Vakil (1960) reported good control in 66·6 per cent amongst 15 diabetics, while Mukherjee *et al* (1960) had good response in 50 per cent and fair response in 25 per cent in a small series of 12 patients. Mody (1961) in a study of 26 patients observed good response in 42·3 per cent only and fair response in 30·7 per cent. Ho Yuen (1959) from Singapore reported 89·5 per cent success; Sison *et al* (1959) from Philippines had 79·7 per cent success with the drug. Several other authors found satisfactory response, varying between 60 and 85 per cent.

Obvious reasons for such variations in the percentage of response are the criteria taken for control, rigidity of diet regime enforced and the size and nature of the series studied. Joslin *et al* (1959) has accepted the fasting blood sugar of 130 mg./100 ml. or more as abnormal and usually diagnostic of diabetes. Accordingly in this series we have taken as successful response to therapy only cases who achieved the fasting blood value of less than 130 mg./100 ml. This was arbitrarily subdivided into good control and fair control on the basis of fasting blood sugar level being less or more than 110 mg./100 ml. respectively. The criteria for control in this series are almost similar to that adopted by Tulpule and Vakil (1960). In such a study the time factor taken for control is also important. For example, 19 cases in this series were controlled within 3 weeks and 6 patients could be further controlled subsequently after variable periods (4 to 12 weeks). It appeared to us that failure to follow the prescribed diet regime strictly was partly responsible for the delayed control. Almost an equal number of cases (7, 6 and 6) were controlled in the first, second and third weeks of study respectively (Table 4). On closer scrutiny of the fasting blood sugar values of these cases it was found that of the 13 cases who were controlled within 2 weeks, only three (23 per cent) had values above 200 mg. per cent, while of the 6 cases who were controlled in 3 weeks, four (66·6 per cent) had values above 200 mg. per cent. In five (83 per cent) of the cases who took 4 weeks or more for control, the fasting blood sugar value was more than 250 mg. per cent, the highest being 451 mg. per cent. This observation suggests that initial blood sugar level is also important in the matter of time taken for control.

On analysis of the particular dose of chlorpropamide used and the time taken for control it was seen that 500 mg. of chlorpropamide daily had been received by only four (30 per cent) of the 13 patients who were controlled within 2 weeks, three (50 per cent) of the 6 patients who were controlled in 3 weeks and 66 per cent of the cases who were controlled in 4 weeks or more. All other cases had received 250 mg. daily. This would indicate that the time taken for control was not actually influenced by the amount of dose administered. Lowenthal *et al* (1959) reporting similar experience stated that efficacy of chlorpropamide was not increased by higher dosages even as much as 4 g. daily. Hence selection of dosage for a particular patient is better done on the basis of his pretherapy fasting blood sugar level. This tends to lend support to the manner in which the dose was selected in this study. We have found that it is seldom necessary to exceed the dose of 500 mg. daily. Similar conclusion was arrived at by previous workers.

The results have been further analysed in relation to several other factors, viz., the age of the patient, age of onset of the disease, duration of the disease, previous treatment and complications and associated disorders. It was observed that response was poor in patients below 20 years of age ; whereas it was almost equally satisfactory in the age groups 21-40 years and above 41 years. This agrees well with the observations of Canessa *et al* (1959) and Mody (1961). Of 9 patients below 40 years of age, 8 responded satisfactorily. Ho Yuen (1959) has reported similar experience from Singapore that control was as good in young diabetics (31-35 years) as in the older group (56-60 years). When correlation was sought between the satisfactory response and the age of onset of the disease no significant difference was observed in any age group, except in the age-group below 20 years. The duration of the disease did not either seem to affect the result—three patients in the series with duration of the disease for 10 years or more responded very well. Garcie Reys *et al* (1959), Greenhouse (1959), Canessa *et al* (1959), and Hills and Abelove (1953) have reported similarly. It was also observed that males are more effectively controlled than females—90 per cent control in the former group as against 60 per cent control in the latter. This is in conformity with the observation of Ho Yuen (1959). Previous failures with insulin or other sulphonyluria compounds did not in any way affect the ultimate outlook so far as control with chlorpropamide was concerned. Several communications have appeared to this effect. Out of 10 patients (Table 1) who failed to respond to previous therapy, 7 were ultimately controlled with chlorpropamide. It was, however, obvious that chlorpropamide was more likely to succeed in other sulphonylurea-fast cases than in insulin failure cases. None of the complications like neuropathy, nephropathy and retinopathy seem to affect the chlorpropamide efficacy adversely and *vice versa*. Canessa *et al* (1959) have also made similar observations.

The problem of treating diabetics does not end with control of blood sugar. The controlled stage has to be maintained and perhaps this is more important if complications are to be eventually prevented. Long term follow up is, therefore, an essential part of the regime. Although this is difficult in our country, an attempt has been made in that direction in the present study. Twenty of the 30 patients received different dosage of chlorpropamide at different intervals and were followed up with weekly blood sugar estimation for variable periods. It was found that 250 mg. of the drug daily was best in maintaining satisfactory control Daily administration of the drug was necessary and intermittent use led to decontrol sooner or later. It was interesting to observe prolonged control after discontinuation of the drug in one hypothyroid diabetic. Burrell *et al* (1959) have reported that in 5 patients the drug could be discontinued after initial control, and suggested that this could be spontaneous or induced remission. Such cases are, however, few and far between. The slow excretion of chlorpropamide was the reason why intermittent therapy was attempted in this series. Only occasional and mild diabetics may respond to this intermittent form of therapy which is not recommended for general use. Similar conclusion was arrived at by Fuleihan and Plimpton (1959) and Hills and Abelove (1959).

Weakness and giddiness were complained of by five patients but did not necessitate withdrawal of the drug. No adverse effect was seen on the blood count and liver function. It appears that a daily dose of up to 500 mg. is safe, effective, well tolerated and without much side effects. This observation is in accord with those of Greenhouse (1959), Baeser (1959), and others.

Summary

1. Thirty unselected diabetic patients who formed the subject matter of this study received chlorpropamide orally in doses varying from 250 mg. to 500 mg. daily. The period of observation was spread well over 6 months.

2. Twenty-five subjects (83·3 per cent) were satisfactorily controlled, most of them within the first three weeks. None of these successful cases required more than 500 mg. of the drug a day. Response was better in male diabetics.

3. The pretherapy fasting blood sugar level was taken as a guide for deciding the dose of chlorpropamide, and this was found to work well. Patients with fasting blood sugar value above 200 mg./100 ml. received 500 mg. of chlorpropamide and those below this level received 250 mg. of chlorpropamide daily. Patients who were earlier treated with insulin also received 500 mg. daily.

4. Juvenile diabetics did not respond to this therapy. Otherwise the response was hardly different in the age group 21-40 and above 41 years of age. The satisfactory response to this form of therapy was irrespective of the duration of the disease, the presence of complications (ketosis excepted) and previous therapy with insulin or other sulphonylurea compounds. Seven of the 10 insulin or/and other sulphonylurea-fast cases responded to chlorpropamide.

5. Various forms of intermittent therapy to maintain the control was also studied and it was invariably found that daily administration of 250 mg. of chlorpropamide was so far the best.

6. Weakness and giddiness were complained of by 5 patients only. No serious side effects seem to occur with a daily dose not exceeding 500 mg. of chlorpropamide.

7. Rigid adherence to prescribed diet is a valuable adjunct to this form of therapy, both for the purpose of securing early control and for maintaining the controlled stage.

8. The over-all impression was that chlorpropamide is an effective and safe drug suitable for control of a sizeable proportion of our diabetic population, excluding the juvenile type.

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EVALUATION OF STRESS PHENOMENON IN BUERGER'S DISEASE

Studies of 17-Ketosteroids*

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For evaluating the stress phenomenon in the thromboangiitis obliterans cases the estimation of urinary neutral 17-ketosteroids was considered as an important aspect of investigation. Testes and adrenal cortex are the two sources for the formation of 17-ketosteroids in the male, whereas in the female the adrenal cortex may be considered as the sole source of this hormone. The 17-ketosteroids comprise a group of steroid compounds which, as the name indicates, have in common a ketone group at position 17 of the steroid nucleus.

MATERIALS AND METHOD

The series included 10 control subjects (control) and 20 patients suffering from thromboangiitis obliterans.

* From a thesis submitted to the Calcutta University in 1959 for the degree of Master of Surgery.

Estimation of 17-ketosteroids was done by the proposed standard method recommended by the M.R.C. Committee on Clinical Endocrinology of England, which is basically Callow-Zimmerman's method. The normal average of ten control subjects is shown in Table 1.

Results

Table 1—Showing Estimation of Total 17-Ketosteroids from 24 Hours' Urine in Normal (Control) Subjects

Serial No.	Age (years)	17-Ketosteroids/ 24 hours' urine
1	30	14 mg.
2	32	15·7 mg.
3	28	10·2 mg.
4	40	19·5 mg.
5	36	13·2 mg.
6	25	17 mg.
7	27	15 mg.
8	34	18·7 mg.
9	29	14·7 mg.
10	26	10·5 mg.
	Average	14·8 mg.

The cases of thromboangiitis obliterans were divided into two groups. Group 1 consisted of eight patients whose total 17-ketosteroids level was below average normal value (Table 2). Group 2 included twelve patients whose total 17-ketosteroids level was above average normal value (Table 3).

Table 2—Showing 17-Ketosteroids Values in Group 1 Patients

Serial No.	Age (years)	17-Ketosteroids/ 24 hours' urine
3	40	12 mg.
7	35	10 mg.
8	28	13 mg.
14	26	10·2 mg.
24	37	10·8 mg.
27	35	10·3 mg.
29	35	13·6 mg.
34	50	13 mg.
	Average	11·2 mg.

Table 3—Showing 17-Ketosteroids Values in Group 2 Patients

Serial No.	Age (years)	17-Ketosteroids/ 24 hours' urine
6	24	15·8 mg.
9	40	18·2 mg.
11	45	17 mg.
16	40	27·5 mg.
19	20	25·6 mg.
21	40	47·5 mg.
22	32	22·6 mg.
23	30	30·8 mg.
25	29	15·8 mg.
28	35	37·8 mg.
31	22	19·3 mg.
32	34	15·7 mg.
	Average	24·4 mg.

Discussion

In 10 control subjects the average value of 17-ketosteroids was found to be 14·8 mg. in 24 hours.

In 20 thromboangiitis obliterans cases the estimation of 17-ketosteroids in 24 hours' urine showed two types of changes. In one group of patients the average value of 17-ketosteroids was below normal (Table 2) ; whereas in another group of patients the average value was above normal (Table 3). Eight patients belonged to the former group and here the average value of 17-ketosteroids was 11·2 mg. in 24 hours. Twelve patients belonged to the latter group and the average value of 17-ketosteroids in them was 24·4 mg. in 24 hours.

Increased 17-ketosteroids excretion was a pattern which was found in stress conditions. In cases with lower or higher excretion of 17-ketosteroids in the present study, stress situations had been in the form of (i) presence of ulceration and gangrene, (ii) psychological stress in the patients and (iii) a constant painful condition.

These were sufficient to explain the increase of 17-ketosteroids in urine. But then why do we encounter a group with lowered 17-ketosteroids excretion? It has been observed that in chronic

stress situations the urinary 17-ketosteroids might be lowered and because these patients were all chronic stress sufferers, the lowered values could be explained.

From the group with higher excretions of 17-ketosteroids a relationship of the hypothalamo-pituitary-adrenal axis with a disease might be found.

Whether increased androsterone was responsible for the condition and whether or not this was a cause or an effect of the disease cannot be stated very precisely.

The histological study of adrenal glands in two cases suggested hyperactivity in them. So the histological study corroborated well with the findings in the group of increased 17-ketosteroids excretion.

But if we consider all the patients together without any grouping, we find that there was an over-all increase in the 17-ketosteroids excretion.

Summary

From the estimation of the urinary neutral 17-ketosteroids in thromboangiitis cases no definitely conclusive evidence emerged which could supply a clue to the causation of the disease. In the two groups of cases (8 and 12 patients respectively) the average values of urinary 17-ketosteroids, when estimated, were found to vary from each other. In group 1 the average reading was 11·2 mg. in 24 hours. Whereas in group 2 it was 24·4 mg. in 24 hours. In control subjects the average value of 17-ketosteroids was 14·8 mg. in 24 hours. The higher values were probably due to the painful conditions of the patients which might produce hyperactivity of the adrenal cortex. In the group with lower values the likely explanation was that in chronic stress phenomenon the excretion of 17-ketosteroids might be lowered. But together the values of the two groups were above normal. Evidence of hyperactivity of the adrenal cortex also suggested this possibility.

It might reasonably be assumed that the hyperactivity of the suprarenal cortex and the increased excretion of 17-ketosteroids in the majority of cases were the effects of the disease, and not the cause of it.

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EFFECT OF DITHIAZANINE IN ASCARIASIS, TRICHURIASIS, ENTEROBIASIS AND ANKYLOSTOMIASIS

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The helminthic infections are spread throughout the world. Stoll (1947) after a careful survey, has estimated that the numbers of helminthic infections throughout the world in millions are 3554 for *Trichuris trichiura*, 35 for *Strongyloides stercoralis*, 644 for *Ascaris lumbricoides*, 208 for *Enterobius vermicularis* and 456 for *Ankylostomes*. These parasites play a significant role in pathogenesis of several diseases and are responsible for ill health of a large population of the world. Human helminthic infections are often mixed. Although several drugs have been used in the eradication of these parasites for many years, the need for a safe, cheap and practicable oral drug having broad spectrum anthelmintic activity still exists. Piperazine derivatives which are cheap and safe agents lack activity against trichuriasis and strongyloidiasis. Dithiazanine, the new oral anthelmintic has been reported to have broad spectrum activity which covers *Ascaris, Trichuris, Strongyloides* and *Ankylostomes* (Frye *et al*, 1957 ; Miller, 1957 and Swartzwelder *et al*, 1961).

Dithiazanine is a cyanine dye and chemically it is 3, 3-diethyl thiadicarbocyanine iodide. The compound is a blue powder and is slightly soluble in water. It is not absorbed from the intestinal tract and passes unchanged through the intestines giving a blue colour to faeces.

Studies with dithiazanine in animals and human beings have shown that it is free from any toxicity. Anthelmintic activity of this drug has been demonstrated in animal experiments as well as clinical trials in humans (Fry *et al.*, 1957 ; Miller, 1957 ; Swartzwelder *et al*, 1961).

Materials and Methods

The present paper describes our experience with dithiazanine in 68 helminthic infections with *Ascaris, Trichuris, Enterobius* and *Ankylostomes*, the last accounting for 45 cases. The drug employed in the study was 'dilombrin' (Pfizer)

and was administered as 100 mg. enteric coated tablets. All adults received 600 mg. of dithiazanine daily for 5 days in a single dose or in three equally divided doses, whereas children under 14 years received a daily dose of 300 mg. for 5 days.

35 patients were treated in the hospital, whereas 10 were treated at the outpatients' department. Diagnosis was based upon the demonstration of eggs in stool smear prepared by merthiolate-iodine formalin (M.I.F.) concentration method (Blagg *et al*, 1955 ; Dave and Gadgil, 1959). Egg counts were done by Stoll's dilution technique (Faust, 1956). On completion of therapy stool examination by M.I.F. concentration method was repeated for 3 successive days, starting one day after completion of drug administration and egg count was repeated on the second day of completion of treatment. The diagnosis of enterobiasis was based upon the demonstration of pinworm eggs on scotch-tape swabs. Evaluation of therapy was based on examination of 3 successive daily scotch-tape swabs starting one day after completion of drug administration. At least half the cases were followed up for a period of 1 month and smear and egg counts were then repeated. It was not possible to follow up the rest. 28 cases showed worm infestation with one species whereas different species were encountered in 17 cases.

Observations

Ascariasis—23 patients with ascariasis were treated with dithiazanine. The age of patients varied from 3 to 46 years ; 6 were under 10 years whereas the rest were above it. 11 patients were assessed on the basis of stool examination with M.I.F. concentration method, whereas other 12 cases were assessed by egg counts done by Stoll's method. 7 patients showed mild, 9 moderate and 7 heavy infection. The results are shown in Table 1.

There was 63 per cent reduction in the total egg count in these patients with this therapy. In nine cases there was complete elimination of parasites as judged by absence of eggs in the stools up to 1 month. In 7 cases, although the infestation was not completely eliminated, it was substantially reduced, i.e., more than 75 per cent, as judged by egg count or smear examination. The drug was considered to be a failure in 7 cases where parasitic infection was reduced to less than 75 per cent. In two cases, there was an increase in ova of roundworms with therapy. Results of single daily dose therapy and therapy with divided doses were similar.

Table 1—Showing Results of 23 Cases of Ascariasis Treated with Dithiazanine

Case No.	Age (years)	Weight (lb.)	Grade of infestation	Dose (mg./tab. ×days)	Pre-treatment smear or egg count/g.	Post-treatment smear or egg count/g.
1	30	101	M*	600 O.D. ×5	11,000	2,500
2	35	93	MO°	600 O.D. ×5	23,000	2,200
3	18	84	H**	600 O.D. ×5	1,19,000	77,000
4	28	110	MO	600 O.D. ×5	31,000	34,000
5	45	130	MO	200 T.D.S. ×5	28,000	0
6	14	69	MO	200 T.D.S. ×5	48,000	28,000
7	22	110	M	200 T.D.S. ×5	14,000	1,000
8	40	118	M	200 T.D.S. ×5	15,000	0
9	19	136	H	200 T.D.S. ×5	78,000	23,000
10	19	136	M	200 T.D.S. ×5	12,000	3,000
11	20	75	M	200 T D.S. ×5	1,000	1,000
12	8	38	H	100 T.D.S. ×5	1,92,000	73,400
13	8	38	H	100 T.D.S. ×5	+++	+
14	28	110	M	200 T.D.S. ×5	+	0
15	18	80	H	200 T.D.S. ×5	+++	0
16	24	96	H	200 T.D.S. ×5	+++	+
17	10	53	H	100 T.D.S. ×5	+++	++
18	3	26	MO	100 T.D.S. ×5	++	0
19	19	100	MO	100 T.D.S. ×5	++	0
20	26	83	MO	200 T.D.S. ×5	++	0
21	46	135	MO	200 T.D.S. ×5	++	0
22	7	33	M	100 T.D.S. ×5	+	0
23	5	28	MO	100 T.D.S. × ?	++	+++

* M=mild infestation; +=1 to 5 eggs/smear; ° MO=moderate infestation; ++ =5 to 20 eggs/smear; ** H=heavy infestation; +++ =more than 20 eggs/smear; O.D.=once daily; T.D.S.=thrice daily.

While analysing these cases, it was felt that with dose of 600 mg. per day for 5 days, best results were observed in mild and moderate infestations and more failures are encountered in heavily infested group.

Two patients of heavy infection who failed to respond with first course, were given a second course after 1 month. One of these partially responded, and the other failed.

The efficacy of the drug on ascariasis seems to be well demonstrated. The failures in elimination may be due to insufficient dose. Perhaps larger doses and longer course of therapy might have succeeded in clearing stools of ova in heavily infested cases. Swartzwelder *et al* (*loc. cit.*) have reported complete elimination of ascariasis infection in 66 per cent of their cases and 97 per cent reduction in total egg count of the whole group with 10 mg. per pound per day for 5 days. These authors have reported successful results even in heavy infestations. However, it is our feeling that 10 mg. per pound of body weight per day for 5

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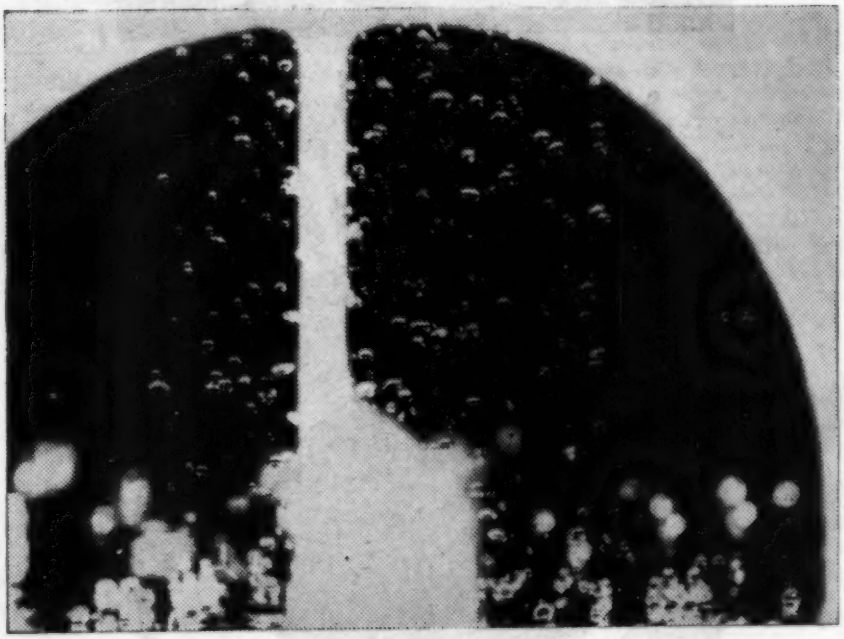

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days would be an insufficient dose for heavily infested patients.

Trichuriasis—Role of whipworm infestation in pathogenesis of diseases is doubted by some authorities. However, there seems to be enough evidence to suggest that heavy infestations with whipworm, specially in children, may be associated aetiologically with diarrhoea, dysentery, abdominal pain, anaemia, weight loss, weakness, urticaria and prolapse of rectum (Frye *et al*, 1957; Miller, 1957; Swartzwelder *et al*, 1961). Mild whipworm infestations although not producing clinical symptoms may provide a source of infection for others or of reinfection for themselves. 18 adults and 2 children with whipworm infestation were treated with dithiazanine. The infestation ranged from light to moderately heavy. In 13 cases egg counts were done prior and subsequent to therapy, whereas in 7 cases assessment was made from stool examination with M.I.F. concentration method. The results are shown in Table 2.

The overall reduction in egg count was 87 per cent. 15 of the 20 patients showed a complete parasiticidal cure (80 per cent). No egg of *Trichuris trichiura* could be detected in these cases either by egg counting method or in 3 successive concentrations of stools. In 4 patients where infestation failed to be eliminated, the eggs became extremely scarce in the stools. In 14 cases stool examinations were repeated at the end of 1 month after therapy and the results confirmed the therapeutic efficacy observed immediately following the treatment. In majority of the patients parasiticidal cure was associated with clinical cure.

Table 2—Showing Results of 20 Cases of Whipworm Infestation Treated with Dithiazanine

Case No.	Age (years)	Weight (lb.)	Grade of infestation	Dose (tablets × days)	Pre-treatment smear or egg count/g.	Post-treatment smear or egg count/g.
1	25	90	MO°	6 O.D. ×5	16,000	0
2	38	71	H**	6 O.D. ×5	38,000	0
3	18	84	H	6 O.D. ×5	27,000	0
4	28	128	M*	6 O.D. ×5	2,000	0
5	22	96	H	2 T.D.S. ×5	41,000	0
6	70	112	M	2 T.D.S. ×5	8,000	0
7	45	120	MO	2 T.D.S. ×5	13,000	0
8	14	69	H	2 T.D.S. ×5	29,000	16,000
9	40	96	MO	2 T.D.S. ×5	16,000	0
10	50	98	MO	2 T.D.S. ×5	17,000	0
11	47	136	MO	2 T.D.S. ×5	18,000	8,000
12	47	136	MO	2 T.D.S. ×5	3,000	2,200
13	36	90	MO	2 T.D.S. ×5	++	0
14	50	75	MO	2 T.D.S. ×5	++	0
15	23	88	M	2 T.D.S. ×5	+	0
16	20	88	MO	2 T.D.S. ×5	15,000	0
17	3	26	MO	2 T.D.S. ×5	++	0
18	11	55	H	1 T.D.S. ×5	+++	+
19	26	83	MO	2 T.D.S. ×5	++	0
20	46	120	MO	2 T.D.S. ×5	++	+

* M=mild infestation; + =1 to 5 eggs/smear; ° MO=moderate infestation; ++ =5 to 20 eggs/smear; ** H=heavy infestation; +++ =more than 20 eggs/smear; O.D.=once daily; T.D.S.=thrice daily.

Frye *et al* (1957) reported a cure rate of 87·5 per cent whereas Swartzwelder *et al* (*loc. cit.*) reported a cure rate of 97 per cent in their series of cases of trichuriasis treated with 200 mg. of dithiazanine, thrice daily for five days.

Enterobiasis (*threadworm infestation*)—15 patients with enterobiasis of age group 4 to 34 years were put on dithiazanine treatment in the dose described above. Three of them were adults and the rest were below 14 years. Evaluation of therapy was based on results of 3 successive scotch-tape swabs starting one day after completion of therapy. In 10 patients scotch-tape swabs were repeated a month after completion of therapy. Therapy was considered a failure if even one egg was demonstrated on any one of the three post-treatment or follow-up scotch-tape swabs. Both pre- and post-treatment swabs were taken in early morning before the patient had bowel movement.

12 out of 15 patients (80 per cent) were cured with the treatment. On the basis of the number of ova in pretreatment swabs, patients were arbitrarily classified in three groups viz., mild, moderate and heavy infection groups.

Results of the treatment are summarised in Table 3.

Table 3—Showing Results of Dithiazanine Treatment in Enterobiasis

Grade of infestation	No. of patients	No. of patients with positive post-treatment swab	Cure rate
Mild ...	4	Nil	...
Moderate ...	4	Nil	...
Severe ...	7	3	...
Total ...	15	3	80 per cent

In the mild and moderate infestation groups all patients got cured but in the heavily infested group 3 out of 7 failed to get cured.

Miller (1957) and Swartzwelder *et al* (1961) reported 100 per cent cure rate in enterobiasis in children with a dose of 100 mg. tablets for 5 days.

We also found this dose quite effective in children. We also tried a larger dose in adults.

Hookworms—Ten adults with hookworm infestations were treated with dithiazanine. In 8 cases egg counts were done prior and subsequent to therapy, whereas two cases were assessed by smear examination only. On the basis of egg count prior to therapy 7 cases were graded as mild, and 3 having heavy hookworm infestation. The data on these 10 cases are summarised in Table 4.

Of 7 cases having light hookworm infestation, 5 showed complete clearance at the end of 5 days treatment, and 2 cases showed significant reduction in egg count. In these two cases egg-count fell to zero, without any further treatment, by the 30th day of completion of treatment. Thus parasitic cure was almost complete in the lightly infested group. All 3 cases with heavy infestation failed to respond although there was a substantial reduction in egg count (more than 75 per cent). The overall reduction in egg counts with treatment was 91 per cent.

It is thus apparent that dithiazanine has definite but mild anthelmintic activity against ankylostomiasis. The results of this study compare favourably with those of Swartzwelder *et al* (1961) who reported complete elimination of infestation in 23 out of 39 lightly infested patients.

Multiple helminthic infestations—17 patients in the present group had more than one helminthic infestation. 7 patients had mixed roundworm and whipworm ; two had mixed roundworm and threadworm ; two had roundworm and hookworm, and six had infestation with roundworm, whipworm and hookworm. In most of the cases the drug acted on all helminths at the same time and eliminated all infections, but in some cases elimination was not uniform—one parasite was completely eliminated and the other was only partially so.

TABLE 4—SHOWING RESULTS OF TEN CASES OF ANKYLOSTOMIASIS TREATED WITH DITHIAZANINE

Case No.	Age (years)	Weight (lb.)	Grade of infestation	Dose (tablets × days)	Pre-treatment smear or egg count/g.	Post-treatment smear or egg count/g.
1	22	102	M*	2 T.D.S. × 5	7,600	1,700
2	35	75	M	2 T.D.S. × 5	+	0
3	20	88	M	6 O.D. × 5	3,000	3,000
4	47	136	H**	2 T.D.S. × 5	21,000	4,000
5	22	110	M	2 T.D.S. × 5	2,000	0
6	14	69	H	2 T.D.S. × 5	19,000	5,000
7	57	90	M	2 T.D.S. × 5	+	0
8	45	110	M	2 T.D.S. × 5	8,000	0
9	22	96	M	2 T.D.S. × 5	1,000	0
10	35	93	H	600 mg. × 5	42,000	7,800

* M = mild infestation; + = 1 to 5 eggs/smear; ** H = heavy infestation; O.D. = once daily; T.D.S. = thrice daily.

Side effects and toxicity—The drug is well tolerated and free from any serious toxic reactions. Except two patients who complained of vomiting, all other patients tolerated the enteric-coated tablets well. Haemograms, urine analysis and liver function tests including prothrombin time, serum bilurubin, plasma proteins, alkaline phosphatase, and thymol turbidity were studied before and after treatment in 13 cases. These tests revealed no significant differences.

SUMMARY

Results of dithiazanine treatment in 68 assorted helminthic infestations have been described. The drug was found to have anthelmintic activity against *Trichuris trichiura, Oxyuris vermicularis, Ascaris lumbricoides* and *Ankylostomes.*

Adults were given a dose of 600 mg. once a day or 200 mg. thrice daily, for 5 days, whereas children received a dose of 300 mg. once a day or 100 mg. thrice daily for 5 days. With this dosage schedule, 9 of 23 cases with ascariasis ; 15 of 20 cases with trichuriasis, 12 of 15 cases with oxyuriasis and 7 of 10 cases with ankylostomiasis were cleared of the infestation. Mixed helminthic infestations responded equally well as single infestation.

This polyvermicidal activity of dithiazanine makes it a useful broad spectrum anthelmintic.

The drug was administered as special enteric coated tablets and was generally well tolerated and was found to be free from any serious toxicity.

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EFFECT OF NARDOSTACHYS JATAMANSI FUMES AND AEROSOLS IN HISTAMINE-INDUCED BRONCHIAL ASTHMA IN GUINEA PIGS*

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There is reference in Ayurvedic literature regarding the use of fumes of jatamansi for relief of dyspnoea during an acute asthmatic attack (Charak Samhita). Bronchodilator effect of the alkaloidal fraction of *N. jatamansi* has been reported previously by Bose *et al* (1957). The drug was also found to antagonise histamine effects on the tracheal chain and in lung perfusion experiments by us (to be reported). It was therefore thought worthwhile to investigate the effect of fumes and aerosols of *N. jatamansi*, if any, in histamine aerosol induced bronchial asthma in guinea pigs.

Material and Methods

In the present investigations male guinea pigs weighing between 800-900 g. were exposed in pairs to aerosols of histamine in a twin rectangular perspex chamber ($12'' \times 10'' \times 7''$) partitioned into two compartments for the test and control animals. Aerosols in the form of fine mist were delivered into each of the compartments from an automiser containing 25 ml. solution of histamine acid phosphate under air pressure of 28 mm. Hg. A slit opening made in the bottom of the test compartment allowed the entry of fumes of *N. jatamansi* produced by sprinkling 1 g. of the powdered drug over moderately 'fusing' pieces of charcoal (without flames) kept in an earthen pot and covered by an inverted funnel to direct the fumes into the compartment. A similar slit opening in the other compartment allowed hot air or paper smoke for control studies. Concentration of the fumes or smoke in the chamber was estimated from the percentage decrease in the transmittance of reflected light by the glossmeter of a densitometer. The temperature of the fumes of hot air entering the chamber was kept constant at 34°C.

Two sets of experiments were performed. In one, both the control (Group I) and test (Group II) animals divided into three batches (A, B and C) were subjected to aerosols of histamine acid phosphate 1 : 300 ; 1 : 200 ; 1 : 100 concentration respectively till each animal showed marked dyspnoea, gasping and asphyxial twitchings. Fumes of jatamansi were then introduced into the compartment containing successively the three batches of the Group II animals while for control studies ordinary hot air and paper smoke were allowed to enter the control compartment for the batches A, B and C of Group I animals. Introduction of the fumes and smoke in the chamber was allowed till a 5 per cent reduction in the transmittance of light was observed in both the compartments. Hot air (34°C) from an air blower, passed over the burning charcoal was allowed to enter the control compartment for the same length of time as the fumes or smoke in other batches. Percentage of animals revived from collapsed state and relieved of dyspnoea within 10 minutes in both control and test groups was compared.

In another set, Group III and IV animals were first subjected to aerosols of 15 ml. of the alcoholic extract of *N. jatamansi* 1 : 50 and 1 : 25 concentrations respectively, delivered into the compartment, three minutes before exposing them to 1 : 200 and 1 : 100 concentration of histamine aerosol in two batches. The alcoholic extract was prepared by soxhlet extraction of the dried macerated roots of *N. jatamansi* in alcohol for 5 hours. The extract was dried and redissolved in appropriate quantity of ethyl alcohol so as to prepare the required concentrations of the extract for use as aerosols. In two separate control experiments, Group IB untreated animals and Group V animals pretreated with aerosols of 15 ml. of solvent ethyl alcohol, were similarly exposed to histamine aerosols for comparative studies. Percentage of animals protected from passing on to dyspnoeic and asphyxial stage as well as the time for collapse in the unprotected animals was noted for comparison.

Results

The results of the two sets of experiments conducted for investigating the effect of fumes and aerosols of *N. jatamansi* on histamine induced bronchial asthma in guinea pigs are summarised in Tables 1 and 2.

Discussion

In the above investigations, both the control and test animals (Groups I and II) subjected to different concentrations of histamine aerosols were observed to develop dyspnoea, gasping, asphyxial twitchings and collapse in proportion

* With the technical assistance of B. S. Sengar and K. S. Bhatnagar.

TABLE 1—SHOWING THE EFFECT OF *N. jatamansi* ON THE REVIVAL OF GUINEA PIGS FROM ACUTE DYSPNOEA INDUCED BY HISTAMINE AEROSOL

Batch	Concentration of histamine	Ratio of animals revived/died		Percentage of animals revived		Effect on dyspnoea in protected animals	
		Control (Group IA)	Treated (Group II)	Control (Group I)	Treated (Group II)	Control (Group I)	Treated (Group II)
A	1 : 300	[1]3 : 3	6 : 0	50·0	100	Relief after 6·25 minutes	Relief after 1·5 minutes
B	1 : 200	*2 : 4	4 : 2	33·3	66·6	Dyspnoea continued—10 minutes	Relief after 3·25 minutes
C	1 : 100	†1 : 5	2 : 4	0·0	33·3	Dyspnoea continued—10 minutes	Relief after 5·3 minutes

[1] Gradual relief from dyspnoea after introducing hot air.
* Revived after paper smoke but dyspnoea continued.
† Sudden arousal after paper smoke but died after 20 minutes.

TABLE 2—SHOWING THE PROTECTIVE ACTION OF JATAMANSI AEROSOL IN GUINEA PIGS SUBSEQUENTLY EXPOSED TO HISTAMINE AEROSOLS

Concentration of histamine	Ratio of animals protected/exposed				Average time in minutes for collapse in unprotected animals			
	Untreated control (Group IB)	Jatamansi treated		Alcohol control (Group V)	Untreated control (Group I)	Jatamansi treated		Alcohol control (Group V)
		1 : 50 (Group III)	1 : 25 (Group IV)			1 : 50 (Group III)	1 : 25 (Group II)	
1 : 200 ...	1 : 6	3 : 6	5 : 6	2 : 6	3·18	5·05	7·62	4·25
1 : 100 ...	0 : 6	2 : 6	3 : 6	1 : 6	1·42	2·81	4·51	2·53

to the concentration of histamine used. Group II animals which were subsequently subjected to fumes of *N. jatamansi* introduced into the chamber, were found to revive suddenly from collapsed state and get relief from dyspnoea in inverse proportion to the concentration of histamine to which they were exposed previously. Analysis of the data presented in Table 1 reveals that almost all Group II—batch A animals that were exposed to 1 :300 concentration of histamine, recovered and were relieved of dyspnoea promptly after having been subjected to the fumes of jatamansi. Gradual relief from dyspnoea was also noted in about 50 per cent of the Group I—batch A control animals after introducing hot air into the chamber. It is therefore likely that part of the relief in dyspnoea after the fumes might be due to displacement of histamine aerosol in the chamber thus allowing more fresh air for relieving the air hunger. However as with larger concentration of histamine aerosols (1 :200 and 1 :100) collapse was more prompt, hot air alone was found to be ineffective though a significant percentage (66·6 and 33·3 per cent) of animals (Group II—batch B and C) subjected to jatamansi fumes were found to revive from dyspnoeic and collapsed state. On the other hand, as much as 83·3 and 100 per cent of the untreated Group IB control animals (Table 2), exposed to 1 :200 and 1 :100 concentrations of histamine respectively, succumbed within 4 minutes. A few of the Group IA control animals (Table 1) similarly exposed to histamine aerosols were however found to revive suddenly after subjecting them to ordinary paper smoke, but dyspnoea continued in them for much longer period.

The above observation seems to suggest that the sudden revival observed after jatamansi fumes might be due to reflex sensory stimulation of the cortex through the mesodiencephalic activating system, which like reserpine might be activated by the drug (Braceland, 1959) so as to accentuate the stimulant effect of the ordinary smoke. But

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since there was no relief of dyspnoea subsequently by paper smoke as was observed with jatamansi fumes, it is likely that the volatile oil and the alkaloid present in the drug (Bose *et al*, 1957) which have also been found to inhibit histamine effects on isolated tracheal ring and lung perfusion experiments (*loc cit*), might as well directly antagonise the effect of histamine aerosol in the lungs.

In the second set of experiments (Table 2) where animals were previously treated by aerosols of alcoholic extract of *N. jatamansi*, the onset of dyspnoea was delayed quite significantly and a fair number of animals were protected from passing on to dyspnoeic and collapsed state as compared to the untreated control (Group I) as well as to the solvent control (Group V) animals. Further, as greater percentage of animals were found to be protected with increase in the concentration of the drug (1 : 50 to 1 : 25) the protective effect might be attributed to the drug itself.

Another interesting observation in this set of experiments was that the protection in the test (Groups II and III) and solvent control (Group V) was found to be related to the degree of sedation in these animals. It is therefore, likely that the protective effect of the alcoholic extract of *N. jatamansi* may partly be due to its central sedative and psychotropic effects (Arora, 1960), in view of the fact that psychotropic agents have been reported to reduce plasma histamine and serotonin levels in experimental asthma and to lessen the severity of anaphylactic shock (Shibusawa *et al*, 1958 and Waser and Itzbicki, 1959). These interesting experiments on jatamansi which is commonly used in religious *'Havan'* ceremonies, seem to substantiate the beneficial effect of fumes, in relieving the acute attack of bronchial asthma as referred in Ayurveda (*loc.cit.*).

Summary and Conclusion

Bronchodilator effect of *N. jatamansi* fumes and aerosols in histamine induced bronchial asthma in guinea pigs had been studied.

Two sets of experiments were performed. In one the effect of *N. jatamansi* on the revival of guinea pigs from acute dyspnoea induced by histamine aerosol were shown. In the second experiment the protective action of *N. jatamansi* aerosol in guinea pigs subsequently exposed to histamine aerosols were studied.

The observations in experiment I, seem to suggest the bronchodilator effect of *N. jatamansi* which might be due to reflex sensory stimulation of the cortex through the mesodiencephalic activating system, or it might be due to a direct antagonising effect of the volatile oil and the alkaloid present in the drug to histamine aerosol on the lung. In the second set of experiments where animals were previously treated by aerosols of alcoholic extract of *N. jatamansi*, the onset of dyspnoea was delayed quite significantly, where they were subsequently exposed to histamine aerosol.

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SPECIAL ARTICLE

SUGGESTIONS FOR REORGANISATION OF THE INDIAN COUNCIL OF MEDICAL RESEARCH*

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Introduction

The country is at present at the cross road of developments, as it should be, to raise the nation's standard at all levels. Medical research has always been in the background due to the unceasing demand for producing medical practitioners to cope with the existing sickness load in the country. Perhaps all countries in their developing phases had to run through the same stage but they depended largely on their own resources of

* Presented to the Research Workers' Conference of the Indian Council of Medical Research, December, 1954.

technical personnel to improve the standard of knowledge and to solve their own problems. We are still depending on outside help particularly in dealing with some of our problems. But we must now find our own problems and also their solutions. This changing phase will cover the present generation but a greater responsibility is awaiting the coming generation and we must work in such a manner that the maximum benefit comes to them so that they may develop into a worthy nationhood and can take care of their country's health problems by themselves. It is with this end in view that the Director of the Indian Council of Medical Research called for suggestions from various research workers in the country in 1954 for re-organisation of the activities of the Council in the matter of medical research and the subject was discussed at the Annual Meeting held at Baroda the same year.

Since the question has still remained a debateable one the author who resented certain suggestions in that meeting considered it worthwhile to publish them with a view to draw attention of other workers in the line and to all medical scientists to ponder over the matter and make their viewpoints available to all concerned for future action.

The suggested lines of reorganisation of the functions and activities of the Indian Council of Medical Research in relation to the Second Five-Year Plan can be discussed under the following four headings :

1. What should be the future policies ?
2. How these may be implemented ?
3. How to meet the financial obligations ?
4. How to increase the wealth and standard of Medical Research in India ?

What Should be the Future Policies ?

Medical research can be broadly divided into two distinct categories, namely, (i) those that are related to the human welfare in general with no geographical barrier (global) and (ii) those that are related to the human welfare with particular reference to the Indian population. In formulating the policies the greatest emphasis or weightage should be given to the latter. For this purpose a high-level *ad hoc* committee should be initially formed to define the medical and public health problems that are confronting India at present and to arrange them according to priorities. It may not be possible for the I.C.M.R. to undertake the solution of all of them simultaneously with equal efficiency and hence it would be wise to select a few of the top priorities and go on all fours to solve them. The commentator, therefore, is emphatically against sponsoring small scale investigations of unwieldy numbers as are now being pursued. It is, in fact, a wastage of money and energy on the part of the I.C.M.R. to do so.

Perhaps such a policy was necessary in the past but it needs complete reorientation now. The local problems should be the primary concern of the states or the local universities under which the medical colleges should function and like all other nation-building activities medical research should be accepted as the routine activity of the state as well as of the university. Wherever there is a medical institution, research should be considered as a part and parcel of the functions and the funds required for it should come from its regular budget. Without the provision of research that institution should be considered of low standard and should not be allowed to be affiliated to impart teaching for the graduate course in medicine.

But whenever the problem becomes difficult or assumes an all-India importance or the state is unable to deal with it by itself the I.C.M.R. may send its team to help the state or the local authorities. A recent cogent example is the outbreak of encephalitis at Jamshedpur. Similarly problems arising out of the prevalence of malaria, cholera, plague, tuberculosis, leprosy, filaria, etc., are generally of all-India importance.

There are certain institutions in India where the only function or one of the main functions is research. To name a few—the Malaria Institute of India, Delhi ; the Nutrition Institute, Coonoor ; the Central Research Institute, Kasauli ; the All-India Institute of Hygiene & Public Health, Calcutta ; the School of Tropical Medicine, Calcutta ; the Virus Research Centre, Poona, etc. These institutions must carry out research as their staff are particularly qualified to do so. These may be called 'institutional research centres'. Unlike the I.C.M.R. staff, these institutional staff generally have other duties in addition to research. The types of researches that these institutions will carry out may be of the following categories :

1. Fundamental research on the basic medical sciences—generally of world wide interest, e.g., endemicity of cholera, antigenic structure of the plague organisation, epidemiology of plague, cancer, leprosy, etc.
2. Investigation of problems of all-India importance, e.g., malaria, filaria, encephalitis, pharmacology and therapeutics of drugs, etc.
3. Investigation of problems of local importance with or without the collaboration of the other department of the university or the state.

4. Assessment of the value of vaccines, sera, drugs, public health measures, etc.
5. Development of new techniques, procedures or control measures against diseases, etc.

Another function of the I.C.M.R. will be to initiate, coordinate and give guidance to researches whenever such guidance will be sought from either any state or institution. It may even have a committee to advise on the researches to be carried out by the medical colleges, state or other institutions. The I.C.M.R. may also coordinate the same kind of investigations going on in more than one institution in India as proposed this year by Professor S. K. Basu of Nilratan Sarkar Medical College, Calcutta. It may also act as the controlling authority to avoid unnecessary duplication of research by the different institutions.

The third function will be to subsidise certain investigations which are not only of local importance but have bearings on the all-India problems.

It must also help the training of research workers both in India as well as abroad.

The additional function will be to assess the research work done in the country, give opinion about the work and the problems, recommend lines of research, advise the Government on international problems and carry out special work such as on 'bacterial warfare' and so on.

How can the Policies be Implemented?

(A) For the research work undertaken directly by the I.C.M.R.:

The benefit of research is not regional but to all citizens concerned and as such the I.C.M.R. should be purely a Governmental body and not a mere Association sponsored by the Government. It should be named as the National Medical Research Council. The workers should be placed on permanent cadres such as, directors, assistant directors, senior research workers, junior research workers, research assistants, laboratory technicians, laboratory attendants, Class IV staff and if necessary special officers. It is much to be regretted that without the sense of security there is a great deal of frustration among workers and wastage of talents. This point will be further dealt with in connection with the last point.

The proposed Council shall be placed under the Ministry of Health and managed by a council consisting of the following members:

Chairman—an M.P. or the Union Minister of Health himself;

Vice-chairman—Director-General of Health Services;

Secretary—A veteran research worker;

8-10 members—representing all branches of medicine and public health;

2 members—from among the scientific talents of allied subjects;

Certain coopted members—such as chairman of a special Research Commission.

The entire policy and all the schemes sponsored by the Council will be organised, controlled and scrutinised by this single Council. There may be some sub-committees to deal with: (1) the giving of guidance and scrutinising the research projects in the medical colleges and other state institutions; (2) the question of subsidising certain researches and investigations and of training research workers.

So long as the above councils are not formed the following Advisory Committees, some of which have already been suggested by Dr. Pandit, may be formed:

1. *Public Health Advisory Committee*—This committee will deal with the following problems, either directly or through its subcommittees.

(a) Public Health Administration problems, e.g. organisation and methodology of health services, health statistics.
(b) Child welfare and maternity,
(c) Industrial hygiene,
(d) Social medicine,

2. *Communicable Disease Advisory Committee*—

(a) Tuberculosis,
(b) Cholera,
(c) Leprosy,
(d) Plague,
(e) Malaria, (f) Filaria } may be combined,
(g) Virus disease,
(h) Environmental sanitation,
(i) Venereal diseases.

Actually no sub-committee is strictly required except for environmental sanitation. The Communicable Disease Advisory Committee may have two representatives from each of the above special diseases branch and it should be able to deal with all the diseases.

3. *Clinical Research Advisory Committee*—This may have three sub-committees, namely,

(a) Haematology,
(b) Drug Research,
(c) Physiology and Nutrition.

These should be non-existent when the I.C.M.R. will have its permanent cadre of staff and permanent council which will decide every issue.

(B) FOR RESEARCHES CARRIED OUT BY THE INSTITUTION :

Each institution will have a Research Committee of its own to sponsor, guide and scrutinise researches to be carried out by the institution staff. If a subsidy is obtained from the N.M.R.C. or if the N.M.R.C. staff are working in that institution, then those researches will come under the purview of the N.M.R.C. But the Government, if it so chooses, may entrust the N.M.R.C. with the additional function of studying the annual reports of such institutions and sending their opinion, recommendation or criticisms to the Government.

Researches carried out by a medical college should be similarly supervised by a 'Research Committee' of the college, the university or the state whichever may be the controlling authority of that institute. The N.M.R.C. through its subcouncil may coordinate the workings of the research committees and give the necessary guidance.

How to Meet the Financial Obligations?

1. For the proper functioning of N.M.R.C. the Central Government will finance the entire amount from the Federal Exchequer through regular annual budgeting. The major portion of the fund should be spent on research projects to be directly undertaken by the staff of the N.M.R.C. and the remaining part may be allotted for subsidising the work undertaken by the institutions or the states after such help has been agreed upon by previous negotiation.

The staff employed under the Council will enjoy all the usual benefits of the services under the central government and the posts should be pensionable.

2. For the "Institutional Research Centre" defined earlier sufficient budgetary provision should be made in the regular annual budget of the Institute, which should be met by the usual state revenue. But the amount to be allotted for research should be prepared, scrutinised and passed by the "Research Committee" of the Institute. In case of emergency or special need for a subsidy the Institute may approach the N.M.R.C. either for technical guidance or for necessary extra funds or for both.

3. *For the university centres*—The budget provision should be derived from the same fund which meets the other expenditures of the university. The state government or the N.M.R.C. may also subsidise it if necessary.

4. *For researches in the medical colleges*—In the present set up of our country's medical education the state has assumed practically the full responsibility although ideally it should have been under the university. So for the researches to be carried out in the teaching institutions the state will be responsible for the budget which should be prepared by the Research Committee and presented as a part of the normal budget of the college. The N.M.R.C. will meet the expenses of any 'unit' which they may desire to place in an institution, or if the institution applies for a subsidy for any investigation supported by sufficient grounds for the help needed.

5. *Raising the local public funds under the "Research Endowments" by the State government*—Philanthropic men may be approached by the state for the purpose of raising funds for research work, just as they are approached for donations for building hospitals, dispensaries, health centres, etc. The money may even be raised by indirect taxation or by lottery at the initial stage. Such funds may be raised by the Institutes themselves as are being done by many hospital organisations and the teaching institutions. The School of Tropical Medicine at Calcutta raised a large fund at the initial stage of its establishment for research, which is known as the "Endowment Fund" to which is due the large number of researches carried out by that institution.

How to Increase the Wealth and Standard of Medical Researches in India?

One of the most important aims of the N.M.R.C. should be to improve the standard of medical research in India. An eminent non-medical Indian scientist after his return from foreign tour stated in a meeting of the medical scientists that one of the common questions he had to face in the Western countries was why researches in medical science lagged behind physics and chemistry in India? Some of the reasons are known to us all but perhaps few have given serious thought over them. It may, however, be stated that the quality as well as the quantity of research activities is largely influenced by the following factors which may also be briefly discussed here :

1. Extent of importance given to medical research by the people and the state.
2. Attraction for research.
3. Training in research.
4. Tradition.
5. Scope and facilities.
6. Freedom for research.
7. Encouragement and stimuli.
8. Lag between the research and its application in the field.

9. Funds and finance.
10. Research *versus* Investigation.

1. *Extent of importance given to medical research by the people and the state*—The medical teaching and practice have all along been so organised that the people as well as the state have traditionally placed greater importance to medical relief (treatment of diseases) than to the development of medicine as a science. Except in a very small educated circle few realise the importance of research and the benefit that the people of the world have derived out of medical research. That drugs have got to be discovered even for the treatment is not perhaps fully realised by our people and that is why some of them having lost sight of the evolutionary phase of medicine are clamouring for going back to the indigenous or the old Ayurvedic system ; but none, however, suggest to go back in physics, chemistry or engineering. Thus not only people give no importance to medical research but the state also does not behave in a different manner as will be evidenced by the fact that the state has made little or no provision for research either in its medical colleges or in the universities or in the medical and public health services. The reason why it has been so would need an elaborate discussion.

2. *Attraction for research*—To popularise research and to attract young men to build a career sufficient importance and facilities should be given to it. But so far as the medical research is concerned no serious attempt has been made in that direction. The most important point in this connection is the security of service and adequate salary, both of which are conspicuously absent in our country. But since we do not lack in idealism we expect the research workers to be missionaries and develop a spirit of sacrifice. He should be above the average medical practitioner in merit and qualifications ; he should devote unlimited energy and time in his work ; he should be prepared to run through serious hardships in life, particularly if he is a field worker ; but he will be paid low, his service will be terminated with or without notice ; he may be at best on contract service and if he by luck carries on till the date of superannuation he will have no pension. In contrast with this any medical man who has entered with the regular state service on the medical relief side, has security of his service ; he will be entitled to a series of promotions ; he will be able to do private practice and at the end of his career he will receive a pension. Also those who select private practice as a career start with a potentiality of earning a much higher amount than men in service.* Furthermore, when a man has retired from medical service he can still practise and earn over and above the pension, and the private practitioner can earn till his death, whereas a person taken to research as a career cannot practise having left it long ago, nor has he pension to fall back upon. This is the fate of the research worker in our country although it is clear that if any post is worth a pension it is that of the research worker who is a real asset for any country.

So the best medical men in our country are attracted towards private medical practice and the next towards the regular medical service. Only some among the remaining lot come to research ordinarily due to force of circumstances, while only a few join research to build up a career in spite of all the hardships and drawbacks at present attached to it. A group of better men are also attracted towards teaching, but partly due to overburdening them with teaching load and partly for want of facilities—necessary stimuli and funds—they are not attracted towards research. The result is that one of the most important steps to attract young men to research through watching their teachers carrying out some research is lost.

3. *Training in research*—No special attempt is made in our country to train medical men for research. It may be that in other countries too, there is no such special provision except in Russia, but such training is automatically obtained by a large section of the medical men by working under reputed research workers, by seeing and carrying out researches during their student life and by organising postgraduate medical studies of which research or investigation is an essential requirement. Thus in our country only some of those who had the chance of working under the few available research workers have taken to research but that too, not very seriously. The Medical Research Department posts which were meant for research have recently failed to attract serious minded men.

4. *Tradition*—In the Western countries certain institutions and certain eminent research workers develop tradition for research and people from all corners flock to the Institute or the person for receiving training. In our country, due to lack of interest, facilities and support of the authorities for medical research there is hardly any institution where such tradition has develop-

* Recently a non-practising allowance is given to all personnel dealing with clinical practice and completely denied to medical research workers as well as public health workers although they may be better qualified than their counterpart in clinical practice.

ed. If the N.M.R.C. decide to create "Institutional Research Units" or if the medical colleges are placed fully under the control of the university it will not take long to develop such tradition.

5. *Scope and facilities*—There is plenty of scope for research in our country. In fact, a vast field has practically remained untapped regarding drugs and remedies, causes and prevention of diseases and the study of socio-econmic and physico-geographical conditions leading to persistence of such diseases. But for want of facilities in the shape of funds, personnel and equipment no outstanding progress could be made.

6. *Freedom for research*—Freedom for research is considerably restricted in our country primarily due to lack of funds. There are also other reasons. For juniors there are many hurdles to get their ideas through. Besides, where the funds are restricted the hands of the authorities or of the organisation like the I.C.M.R. are tied down to spare only the bare minimum and often less than the minimum funds required for the scheme which is also subjected to strict scrutiny from the point of view of the immediate return. In contrast with this, researches in physics and chemistry have gone on more or less unfettered under the professors of the university.

Sometimes it has been noted that the scheme presented by somebody is not accepted but the same when presented in a little modified form by another person is accepted, or somebody else works out the same scheme from another part of the world with the resultant loss of priority by the person who actually proposed the scheme earlier. And yet another policy is often seen, namely, somebody presents the scheme but another person is asked to carry out the work ; such incidents not only damps the spirit of the worker but the action itself tantamounts to perjury in scientific research for he loses all the credit which would have been his, due to that discovery. This situation can be avoided in three ways, viz., (a) by publishing the abstract of all schemes submitted to the I.C.M.R. or similar organisations, (b) by asking particular persons to present the scheme of enquiry and (c) the scheme may be handed over to another person with the concurrenc of the person presenting it, or by asking them to work in collaboration.

7. *Encouragement and stimuli*—All researches or investigations will lead to either positive or negative results, but during the developmental period certain amount of waste would be inevitable. Encouragement to research can only be given if the authorities are prepared to forego the immediate returns. In the Western countries research work by juniors are sometimes encouraged by offering prizes, medals, stipends or scholarships. Such things are rare in our country. The I.C.M.R.'s attempt to encourage research by offering certain scholarships may be a laudable venture but without the scope of a research career in the country all or the major part of it may go to waste. So long as the responsibility of fostering medical research is not accepted by the state or the university as a part of its regular feature it is doubtful whether I.C.M.R.'s endeavour to sponsor researches in the medical colleges by giving grants ranging from Rs. 1000/- to 5000/- will improve matters. Even under the present system if the I.C.M.R. insists that no support in research schemes would be given unless that college has organised a 'Research Committee' it would be a step further towards progress. Let the scheme be discussed in that Research Committee, let others in the line know about it ; let the results be also discussed in open meetings sponsored by the Research Committee. Thereby a new atmosphere will be created to give them a new stimulus. Let them thus work somewhat independently and rise gradually but it will be a permanent improvement. It is not possible for the I.C.M.R. to spoon-feed them for long. They must begin to walk at some stage and I believe that stage has already come.

8. *Lag between research and its application in the field*—There is always a time lag, more or less in every country, between the scientific discoveries and their practical application in the field, but in our country there is more often lack of application than the lag. Perhaps for this reason, the I.C.M.R. has lately been inviting the heads of the public health and allied services to attend the I.C.M.R. annual conferences. It is doubtful whether such a procedure only is going to improve matters. What is further needed is a forum at which all categories of field workers should join, discuss about the recent advances, their applicability in the field, manner of application, difficulties in the way of such application and so on. Such a forum can be better provided by an annual conference of all public health workers through the auspices of an association like the Indian Public Health Association or similar bodies (for the clinicians, physician and surgeons, such forums already exist in the country). In fact, the administrators may not be interested in the intricacies of the methodology or the interim findings of a piece of research ; they are concerned with broad principles just ready to be applied in the field.

9. *Funds and finance*—Research activities largely depend upon adequacy of funds just as in case of other developmental projects. Moreover money spent on all researches may not give adequate returns. We have to be satisfied with the sum total effect. A good return in one research project out of every five amply compensates for the loss in the other four. For a typhoid carrier survey in New York the cost was $ 30,000 per carrier detected We cannot, however, think of such projects in our country. But what is needed is that adequate funds must be provided which may be obtained from the following sources:

(a) Central Government:
  (i) On item of research under medical and public health education and practices.
  (ii) Development project funds.
(b) State Governments:
  On items of research in medical and public education and practices.
(c) Municipalities:
  On item of medical and public health practices.
(d) Bequests, donations, endowments and trusts.

In the Western countries there are plenty of funds and endowments for research, e.g., Nuffield, Rockefeller, Cuggenhein, George Hooper, Commonwealth, Wuttamul Foundations, etc. In our country we have also a few namely, Tata Memorial fund, Endowment funds (School of Tropical Medicine), Parlakemidi scholarship, National Institute scholarship and I.C.M.R. scholarship, Amir Chand scholarship. People in our country are philanthropic but they channelise their money for building hospitals, dispensaries, *dharmshalas,* etc. Only a few have bequeathed for social work (to the Ramakrishna Mission), education (universities, schools and colleges, etc.), but very few for research and particularly medical research. Perhaps, it would now depend upon what emphasis is put upon it by our national leaders. They can raise any fund if they consider it important and necessary. Where such is the situation our Government should be the best agent to obtain donations and raise endowments and trust funds.

10. *Research versus investigations*—One of the reasons why medical research has lagged behind physics and chemistry is that fundamental research in medicine is few and far between ; most of the schemes are either for field or clinical investigations. Although investigative work has got its value, the country's contributions towards medical research is judged by the fundamental research in medical science done by that country. For this a collaborative research and joint efforts of medical men, chemists, physicists, botanists and members of the allied branches of science are needed and should be organised by the N.M.R.C. It is my intention to state that little or no fundamental research has been done in this country and few are of the order of the standard achieved by physics and chemistry. Funds, facilities and freedom for research are still greatly lacking in our country.

PUBLIC HEALTH

ROUTINE ASSESSMENT OF QUALITY CONTROL IN HEALTH ADMINISTRATION

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Concept in Industry

The concept of quality control in industrial management inplies prompt detection by common statistical methods, of variation larger than the permissible limit of the products from the standard specification, and necessary readjustment of the plant for ensuring products according to specification. The standard of manufacturing process is thus kept under control.

Concept in Public Health

The application of quality control in health organisation, may not be common to ordinary public health workers, but the health administrator uses quality control as a tool in routine assessment of collection and quality of data. Unless the collection as well as the quality of data are checked, it may not be possible to control the organisation and thereby assess precisely the effectiveness of a health scheme or service. To fix up responsibilities for failure of any scheme on the health personnel will therefore necessarily contain two types of information, viz.,

1. Types of vital occurrences in the area, e.g., occurrences of births and deaths, illness of notifiable diseases in the country ;

2. Various types and volume of services rendered to the community, e.g., maternity services, school health service and sanitation service, as rendered by health centres to the communities.

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* Read at a seminar held at the All-India Institute of Hygiene and Public Health, Calcutta.

In the collection of information of the first type, the health administrator would judge the quality of records and type of data against reasonable norms and try to check gross deficiencies. In case of detection of any incompleteness and inaccuracies, readjustment of the organisation as a remedial measure to inprove quality is required to be thought out and applied. The administrator would use the second item to judge the quality of service of the health personnel and if anything divergent from normal variable is detected, the health organisation is to be readjusted for better and more efficient positive health service according to some planned way.

In short, quality of data and quality of output may be controlled by (1) item matching technique, (2) analysis of trends and frequency distribution, and (3) analysis of special tabulations.

EXAMPLES :

Quality control in vital statistics, quality of personnel in terms of community service, and quality control of vaccines are some of the examples of quality control work in health organisation as practised in West Bengal as well as in foreign countries.

In birth and death registration the quality of data depends on accuracy, completeness and coverage. As for example the gross deficiency of 'under-registration' or 'under-reporting' is guessed in our routine assessment by eliminating the places showing abnormally low birth and death rates, taking police station in rural areas and municipalities in urban areas as unit, after tabulation in two-way contingency table. The higher percentage of places in elimination indicates gross deficiency of 'under-registration or 'under-reporting'.

In the union and thana health centres where the medical officers are registrars of births and deaths, the author as sub-divisional health officer used to verify chowkidars' *hatchita* with delivery registers, both domiciliary and institutional, postnatal and infant registers maintained by a trained dai. Unmatched births indicate unregistered birth.

In Singur area, the birth and death registration data, obtained from field staff of population control study are compared with survey data, concerning only vital occurrences within one year, obtained from D.P.H. students under training. Discrepancy between collection data and survey data, indicated deficiency in registration. In this year discrepancy was found and the 'under-reporting' was determined by the detection of a few illegitimate births. The author also used to check the effectiveness of birth and death registration within the sub-division by studying the trend of birth and death rates, whether erratic variation in birth rates have occurred from year to year.

A very good example of 'rate levels' to indicate incompleteness of either registration or reporting is available for Thailand. The incompleteness evident in Thailand's birth and death data for 1947 and 1948 is revealed in the variation of rates between provinces in any one year and between rates for two successive years in any one province. Those for the first ten provinces are shown in Table 1 to illustrate the variations. It would seem quite unlikely that the provinces in the same relatively homogenous country would have birth rates in 1948 as different as 11·43 and 37·48 or death rates of 5·19 and 17·09 for the same year.

In U.S.A. the census branch checks the effectiveness of registration through registration test. As part of 1940 birth registration test the census branch asked every test subject to co-operate by furnishing special copies of birth certificates and death certificates for infants who were born in 1939 December or January, February and March 1940. An attempt was made to match each copy of a birth certificates with the infant card—special card form filled in 1940 census enumeration for each enumerated children born during the same month. Those certificates, having no corresponding infant card were matched with copies of death certificates. Unmatched infant card indicated unregistered birth. Unmatched birth certificate indicated infant who were not born in 1940 census. This information furnished an index of completeness of birth registration.

TABLE 1—SHOWING OFFICIAL BIRTH AND DEATH RATES BY PROVINCES IN THAILAND

Place	2490 Census population numbers	Crude birth rates		Crude death rates	
		2490 (1947)	2491 (1948)	2490 (1947)	2491 (1948)
Kingdom of Thailand ...	17,442,689	23·70	24·43	13·43	10·89
Provinces :					
Bangkok ...	889,538	30·42	37·48	14·61	13·13
Thonburi ...	289,343	29·04	38·57	17·12	17·09
Ayuthya ...	373,889	21·70	22·28	16·10	10·36
Lopburi ...	202,041	17·81	18·92	10·05	8·53
Chainat ...	170,962	14·17	11·43	9·64	5·19
Sing-buri ...	115,669	26·05	23·53	16·90	9·87
Aug-Thong ...	150,515	20·71	17·57	16·72	9·41
Sara-buri ...	207,051	16·55	17·38	12·42	8·10
Pathum-Thani	142,488	17·28	16·06	11·58	5·51
Nonthaburi ...	133,623	30·15	29·60	24·14	16·82

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FORMULA:

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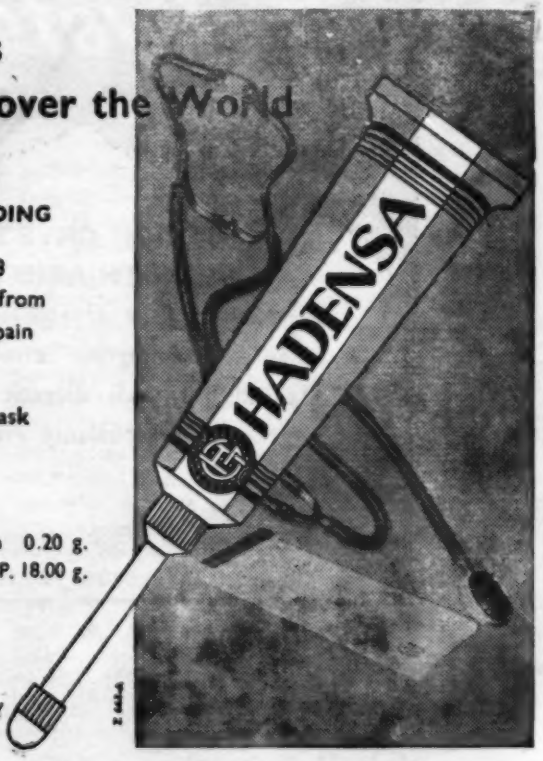
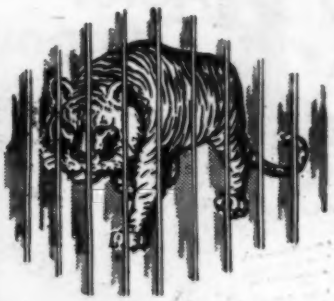


Controlled Tension

SERPINA



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Application of proportional mortality for any particular cause, is another method adopted by census branch in U.S.A. to test the effectiveness of death registration. In Alabama in 1937 the probability that the death was caused by cancer was 5·8 chances out of every 100 deaths, since the proportionate mortality for cancer and tumour was found to be 5·8 per cent.

In U.S.A., Greville using Myers' blended method, made analysis of the nature of heaping in a distribution of deaths by age. He analysed both the 1940 census population and the 1935 deaths in the United States by race. In the words of the author "In interpreting the table it should be noted that extent of heaping or deficiency at any particular digit is indicated by the amount by which the per cent shown for that digit differs from 10 per cent. The 'Index of Preference' which is the absolute sum of deviations from 10 per cent, is a useful general measure of the amount of bias present. The smaller the index, the less error is present. Since if there were no bias all the percentages would be exactly 10 per cent and the index would be zero."

Quality Control in Output and Vaccines

Next let us discuss quality control in output and vaccine. Here S.D.H.O., as public health administrator, measures and checks the output of personnel in terms of service rendered to a community. He checks the quality of output of health personnel by matching the village-wise unprotected register maintained by health assistant with the vaccination list, and vaccination list with attacked list, and then attacked list with the death list, particularly the last matching is done in smallpox areas. Unmatched persons from those lists will indicate the quality of output in terms of accuracy and coverage. The higher percentage of successful vaccination in primary cases, checked from Form No. I, submitted by health assistants using the same batch of lymph, will speak of the potency of vaccine as well as technique of the health personnel. Subdivisional health officer may not always be satisfied with the volume of primary vaccination week after week if it does not correspond with the prevailing birth rates of those areas and may suspect the quality of output as well as level of immunisation particularly when the immunisation programme is current for several years.

During cholera epidemic, the S.D.H.O., as public health administrator in rural areas of West Bengal, matches list of persons inoculated a week back with list of attacked and list of attacked with list of deaths of unmatched persons in respect of the inoculated but attacked after 7 days of inoculation, and checks the quality of output of field staff coverage and quality of anti-cholera vaccine. To face public now against anti-cholera inoculations, the author, as S.D.H.O., arranged for collection of blood samples from persons inoculated 7 days ago with the same batch of anti-cholera vaccine and flurin antibodies in the serum were matched with antigen in the public health laboratory. The samples from vaccines were tested against specifications of the vaccine laboratory. Averages were drawn and was compared with the specification and the variations were found within normal limits.

Quality control of penicillin done in Hindustan Penicillin Factory in connection with the sudden death of an M.P. immediately after injection may be mentioned. The Company immediately withdraw all the vials of penicillin of the particular batch. Quality of samples were checked against specification of the company and averages drawn were found within normal variation and nothing incriminating was found.

In school health service, the health officer as administrator matches defective cards with the clinic attendance register. The higher percentages of unmatched defective cards determine the quality of school health service and matching of other informations item by item checks also the quality of service of school health personnel. Large number of attendance at the clinic for a long period is compared with small number of defective cards. Percentage of follow-up cases checks the quality of service.

In maternity and child welfare service, the health administrators verify antenatal cards with postnatal and infant cards maintained by trained dais in health centres. Large number of unverified antenatal cards indicates quality of M.C.H. service. Large number of 'brought forward' cards indicates contact in later month of pregnant mothers by trained dai. Rates and percentages of terminations of pregnancy in terms of full term, premature, abortion and stillbirth, determines the quality of service rendered by M.C.H. staff. In our country morbidity data are not available. In foreign countries the morbidity data are classified according to international list of diseases and causes of death. Question has been raised, however, as to the accuracy of the information on these certificates and some attempts have been made to assess the accuracy of various items. Workers have reviewed earlier study of the accuracy of cause of death statements and compared autopsy diagnosis for 8,080 persons in Los Angeles Hospital with the cause of death which they believed would have been listed, had no autopsy been performed. They found 79 per cent

agreement between the diagnosis, with the percentages varying from 100 per cent for measles, scarlet fever and cancer of mouth to 16 per cent for softening of the brain. When they used broader categories for their comparison, the agreement reached 90 per cent. Agreement was 50 per cent for those patients who were admitted to the hospitals within 18 hours of death. Diagnosis in each case was made by the authors themselves using the fifth international list of cause of death.

It was concluded from a review of 500 autopsy protocols from 5 hospitals that there was 11 to 20 per cent disagreement between medical statement appearing on the death certificates and pathological findings at autopsy.

Suggestions

1. Repeal of the present law and immediate re-enactment of the Birth and Death Registration Act, so as to serve the needs of the health organisation.
2. Issue of birth certificate must be made compulsory and should be utilised by the Government at the time of admission in school, issue of ration cards, inheritance, etc.
3. Strict enforcement of death certificate in rural areas and the certification should be in line with international certificates.
4. Redesigning of chowkidars' *hathchita* and register of births and deaths.

Acknowledgment

The author is grateful to Prof. K. S. Viswanathan, Dr. K. K. Mathen and Mr. Bhowmick for guiding and help.

CASE NOTES

ACUTE INFECTIOUS LYMPHOCYTOSIS

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Smith (1941) was the first to describe acute infectious lymphocytosis as a specific disease entity. He described two types, the acute and the chronic and presented two cases of children aged 3½ years and 6 years, with unexpected and exaggerated lymphocytosis, with maximum leucocyte counts of 98,000 and 43,000 cells per c.mm. respectively. The course in each was benign, and in neither was there lymphadenopathy, enlargement of spleen, or leukaemia. In all the cases Paul-Bunnell test was negative. The same author described a second group of 11 cases as chronic infectious lymphocytosis with a history of febrile reaction following an upper respiratory tract infection. Associated with the febrile disturbance were anorexia, pallor, loss of energy, irritability, abdominal pain localised to the region of umbilicus and rarely vague pains in the joints. Vomiting was not associated with abdominal pain. The Paul-Bunnell test was uniformly negative in all except two cases where the clinical picture and the course pointed unmistakably to the characteristics of a persistent infection of the upper respiratory tract. He considered that the infectivity of the condition was low. Since the blood reactions appear to be related to infections of the upper respiratory tract it is conceivable that the primary infective agent is a virus, such as has been found responsible for the common cold and influenza. Incubation period has been estimated to be between 12 and 21 days.

Infectious lymphocytosis presents itself with varied clinical features, severity and form. It commonly occurs in the form of epidemics in institutions. An outbreak occurred in a residential nursery in Glasgow in May 1950 (Arneil and Riley, 1952) and many sporadic cases have been noted in children and adults. Duncan (1945) presented 2 cases of infectious lymphocytosis occurring in young adults. The disease has been reported in white and negro races (Moyer and Fisher, 1950).

The course is usually mild but occasionally it presents itself as an abdominal surgical emergency (Duncan 1943). The diagnosis is made by a leucocyte count. The lymphocytes are small and mature. This may or may not be associated, with eosinophilia. Bone marrow shows marked increase in the absolute number of lymphocytes. No virus, bacteria or any other organisms have so far been incriminated. Paul-Bunnell test, Wassermann reaction, Widal and Brucella agglutination tests are negative. Biopsy of the lymph glands may show proliferation of reticulo-endothelial cells of the intervening tissues and hyaline degeneration in the germinal centres of the follicles.

On careful perusal of the literature we have not come across any published report of this condition from this country. Chatterjea (personal communication) has observed a few cases but his findings have not so far been published.

Case Report

Satish, Hindu male child aged 3 years, was admitted to the paediatric unit of Lady Goschen Hospital, Mangalore, on April 25, 1960 with history of acute pain in the abdomen of six days' duration. The pain was said to be worse in the middle of the night. There was history of frequency of micturition during this illness, but there was no pain during micturition. There was no fever or cough during these five days. The attack of pain was the first of its kind. There was no previous history of dysentery or any childhood diseases. Previous health was good.

The child was not seriously ill. He was well built, well nourished and of normal intelligence. There was no tenderness or rigidity in the abdomen. Liver was just palpable. There was no anaemia. Lymph glands and spleen were not palpable. Examination of the other systems did not reveal any abnormality. The boy was running a low grade temperature. The pain persisted and leucocyte counts were done several times during his stay in the hospital (Table 1). Haemoglobin was 12·90 g. per cent, P.C.V. 38 per cent, general blood picture showed red cells to be mostly normocytic and normochromic; white cells were normal in morphology but showed a predominance of mature lymphocytes. Platelets were adequate in number. The marrow from an iliac crest puncture showed normal cellularity and preponderance of lymphocytes. There was no evidence of a leukaemic process. Paul-Bunnell and Brucella agglutination tests were negative. X-ray of the chest revealed hilar adenitis. Plain x-ray of abdomen did not reveal any abnormality. The stool showed presence of *Ascaris lumbricoides*. Antepar, ½ gr., was given the same night and the patient passed three adult roundworms the next day.

TABLE 1—SHOWING RESULTS OF W.B.C. COUNT ON DIFFERENT DATES

Date	Total W.B.C. (c.mm.)	Polymorphs (%)	Lymphocytes (%)	Eosinophils (%)
26-4-1960 ...	75,100	11	85	4
29-4-1960 ...	82,000	19	64	17
7-5-1960 ...	32,250	35	52	13
11-5-1960 ...	21,850	33	63	4
17-5-1960 ...	10,800	34	60	6

Treatment—On admission the patient was put to bed. Antepar was given the same day and the patient passed three roundworms. His pain in the abdomen was not relieved, even though his stool became negative for ova. Since he continued running a temperature, penicillin was given for 3 days. The temperature subsided, the abdominal pain continued. Clinically nothing abnormal was detected in the abdomen. The pain gradually subsided with return of leucocyte count to normal. The patient was discharged.

DISCUSSION

The case reported here satisfies all the criteria of infectious lymphocytosis. The pain could not be attributed to ascariasis as the patient complained of pain even after successful antepar treatment. Incidentally infestation with *Ascaris lumbricoides* is a very common occurrence in this coastal town. There was marked leucocytosis with absolute lymphocytosis. The course of the disease has been benign and typical of infectious lymphocytosis. There was absence of lymphadenopathy and splenomegaly. Paul-Bunnell test was repeatedly negative. The bone marrow examination gave no evidence of leukaemia. Bacterial agglutination tests were negative. Mantoux test was negative. The patient is being followed up since discharge from the hospital.

SUMMARY

A case of acute infectious lymphocytosis has been reported in a three year old Indian boy.

ACKNOWLEDGMENT

We thank Major A. Thimappaya, District Surgeon, South Kanara, and Dr. G. D. Veliath, Principal, Kasturba Medical College, Mangalore, for the facilities provided and for permitting us to report this case.

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MARCUS GUNN PHENOMENON FOLLOWING PTOSIS SURGERY

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This paradoxical movement of the eyelid with opening of the jaw, was first noticed by Gunn in 1883. Falls *et al* (1949) published a review of 115 reported cases. Simpson (1956) published a similar case following squint and ptosis surgery. This paper reports another case of Marcus Gunn phenomenon following ptosis surgery.

In a typical case there is unilateral congenital ptosis, in which the upper lid covers the upper half of the cornea but when the jaw is opened, the apparently paretic lid shoots upwards to a level higher than that of the other eye. Males are said to be more affected than females, and the left eye more than the right.

AETIOLOGICAL HYPOTHESIS

1. *Abnormal nervous connection*—Opinions differ as to the site of aberration, but a majority favours this hypothesis. The lesion may be cortical or subcortical,

internuclear, faulty distribution in the posterior longitudinal bundle and infranuclear—some fibres of the 3rd nerve may arise from the fifth nucleus, or some fifth nerve fibres may reach the levator *via* the auriculotemporal branch.

2. *Functional interference*—Duke-Elder (1952) explains it on physiological basis. Three neurophysiological principles can be considered :

(a) Irritation of normally dormant connections,
(b) Release of inhibition,
(c) Spread of impulses by irradiation.

3. *Atavistic reversion*—In fish there is a strong associated movement of jaw opening and eye opening—deep muscles contracting and superficial muscles relaxing. Thus a weak levator may only elevate the lid when the orbicularis is relaxed by jaw opening. Several authors have supported this view.

Case Report

Mr. S., aged 22, attended the ophthalmic department of the Medical College Hospital, Indore, on 22-12-59 with the complaint of drooping down of the upper lid of the left eye (Fig. 1) for the last two years. No relevant history was forthcoming. There was definitely no history of jaw winking.

Fig. 1 Fig. 2 Fig. 3

The examination of the patient revealed ptosis on the left side. Both eyes exhibited the following conditions: visual acuity 6/9 ; no error of refraction ; pupils and fundi normal ; media clear. Ocular movements were normal except the partial restriction of upward movement of the left eye.

The central nervous system and cardiovascular system showed no abnormality. Blood examination was normal. C.S.F. examination report was normal.

Blaskowicz's operation was done on 8-1-60. The patient was discharged on 25-1-60. He showed moderate improvement, and was advised to report to the hospital after about three months.

The patient reported on 29-7-60 with the complaint that the upper lid of his left eye moved up and down when he took meals.

On examination, all the above statements were corroborated. The following additional points were also noted :

1. On opening the jaw, the left upper eyelid shot up more than the right (Fig. 2).
2. The lid remained up, as long as the jaw remained open (in this case it was noted for 15 minutes).
3. On deviating the jaw on the affected side, there was no increase in ptosis (Fig. 3) ; while deviating the jaw on the opposite side there occurred retraction of the affected lid (Fig. 4).

Fig. 4 Fig. 5 Fig. 6

4. There was retraction of the lid on protrusion of the jaw (Fig. 5).
5. The patient could retract the lid voluntarily (Fig. 6).
6. Inspiration had no modifying effect.
7. Movement of the affected lid did not cause any movement of the jaw.
8. Contraction of the masseter muscle had no effect.

Comments

A short review of the malady, regarding its aetiology, variations in the phenomenon and various stimuli causing the phenomenon following ptosis surgery has been presented. This case presented a few interesting points as regards the variations in jaw winking.

1. The lid retraction was maintained, on keeping the mouth open. Duke-Elder (1952) is of opinion that shooting up of the lid occurs on the act of opening the jaw and is not maintained if the mouth is kept open.
2. On deviating the jaw on the affected side, there was no increase in ptosis.
3. The patient could retract the lid voluntarily.

Summary

A case of Marcus Gunn phenomenon following ptosis surgery is presented.

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CALCUTTA, SEPTEMBER 1, 1961

FAMILY PLANNING

In 1951 the population of India was 359,216,905. The 1961 Census puts it provisionally at the round figure of 438 million. This explosive increase of population has caused much widespread concern. It indicates the alarming and unprecedented increase of 21·49 per cent in ten years which is rightly considered to be a menace to the nation. The increase is due to a steadily declining death rate, particularly in infancy and childhood, which appears to have fallen from 27·4 in 1941-51 to 19 in 1951-61, because of improvements in conditions of health and better control and cure of disease. The birth rate has remained practically the same, i.e., 40 in 1941-51, as well as in 1951-61.

This demographic trend for the population to increase is bound to go up further if the birth rate is not lowered. A lower incidence of widowhood consequent on the increasing span of life may push up the fertility rate and raise the birth rate during the next decade unless measures are adopted to check it. Thus a vicious demographic circle of falling death rate and steady, with a likelihood of rising, birth rate is bound to lead to an explosive growth of population. The seriousness of this demographic situation has focussed attention on what has been called family planning or planned parenthood.

Family planning in India was considered, perhaps for the first time, in about 1935. Since then attempts, mostly lighthearted, have been made to arouse public opinion in its favour but it was subsequent to independence in 1947 that the necessity of launching it as a social policy on a nation-wide basis was recognised and it was made an integral part of National Planning Programme in the successive Five-Year Plans.

Mark Twain has called India a land of perpetual starvation and repeated pregnancies. This may be his own way of saying things but there is no denying the fact that, except in a small section of the population, repeated pregnancies are still the vogue. They sap the life of the mother, make living uneconomic, lead to a high infantile mortality rate and keep up the birth rate. The need to reduce their numbers and to well space them by family planning is imperative.

Family planning is not a uni-purpose emergency measure just to control the rapid increase in population. It is also a social policy for the betterment of the lives of mothers and their children. It enables every family to exercise its right to have children by its own choice. The object of birth control is not only negative, i.e., not to have too many children, but it is positive also inasmuch as it enables parents to space children—and spacing of children helps to preserve the health of the mother, makes it possible for the bringing up of children with adequate love, care and affection, and improves the economic standard, happiness and harmony of family life. This is appreciated by all, more so by women who are more anxious to have fewer children, partly for the sake of children themselves and partly for their own sake.

The family planning propaganda has hardly touched the fringe of the problem but the response to it, wherever it has reached, has been very popular. It will take some time for the tempo to develop and its results may not be tangible during the next decade. Workers and measures are the bottleneck.

Measures fall under two heads: self control and birth control—(Gandhiji's classification). The saintly people reject birth control and swear by self control (abstinence or practice of *brahmacharya*) which, they say, can be easily practised with the help of moral and spiritual education and is infinitely superior to artificial control. But the world is not made of the saintly and on that ground as well as on the ground of physiology, psychology and romance in love and marital life this measure is to be ruled out. A form of self control is the rhythm method which has been tried in India and elsewhere. As was expected, particularly in India with its low rate of literacy, it has failed and has been discarded. Lady Summerskill (Dr. Edith Summerskill) is reported to have said in the House of Lords that the rhythm method thwarted women's natural desire and was not humane ; it advised abstinence at the very time when a woman was least disposed to be abstinent ; it was not in the interest of marital harmony to starve her when she was hungry and feed her when the appetite was diminished ; the very laws of nature were violated ; and the method was far from certain.

The artificial measures of birth control are: (1) local chemical and mechanical means, (2) oral contraceptives, (3) sterilisation, and (4) abortion.

Local chemical and mechanical contraceptives are very popular amongst the so-called intelligent-

sia and the well-off. They are not fool-proof, but if used with care they give a high rate of immunity. They have to be used with continuous care as long as they are needed during the period of fertility. They not only reduce the number of births but enable a couple to have children when they so desire at well spaced intervals. They are a voluntary temporary measure with no life-long limitations. These are the distinct advantages.

For the common man or woman, however, who is not educated and intelligent enough to use contraceptives properly and who is too poor to bear their recurring cost, they play the least effective role in the programme because of their not being of too easy use, absence of a clinic for guidance within easy reach, and lack of proper facilities in the house for their use. If these disadvantages could be got over, which seems to be a formidable task, they would admirably serve the purpose.

Still better—in fact, ideal—would be a cheap, harmless, easy to administer and effective oral contraceptive. No such anti-fertility agent has been found so far but research on various agents is going on in various places in an intensive form for this purpose. Research on Metaxylohydroquinone undertaken at the All-India Institute of Hygiene and Public Health, Calcutta, has shown that the drug reduces pregnancy by about 50 per cent and has not so far shown any ill effects on the volunters on whom it has been tried, but it is considered that it is premature to recommend its general use.

The governmental machinery that is running the programme is concentrating its activities more and more on sterilisation—vasectomy for men and salpingectomy for women. Vasectomy is being popularised with increasing enthusiasm as the most important item in the programme by several States. Camps are being opened by some in rural areas. For low-income groups incentives are being offered in the form of money, leave is granted to employees and subsidies are given to local bodies and voluntary organisations which organise camps. According to the available information, which is incomplete, 1,24,730, persons have been sterilised from 1956 to 1961 (February) in the various States. The operation, particularly vasectomy, is said to be becoming highly popular and is being accepted by the family planning workers in India as the most suitable measure for adoption among the middle and lower income groups. Vasectomy, being much simpler and safer, is being advocated in preference to salpingectomy. Some enthusiasts suggest that sterilisation should be made obligatory by legislation for people who are more than 30 years of age and have more than 5 children. Others advocate legislation that no one should have more than 3 children. Such people forget that family planning has been adopted as a social policy in which there can be no compulsion. Further, many people are conscientious objectors, genuinely averse to artificial birth control on religious, moral or other grounds. How can compulsion be enforced in their cases?

The one great advantage of sterilisation is that it gives hundred per cent protection for the rest of life at one stroke. But it has several very serious disadvantages. One such disadvantage is that it is, for all practical purposes, not reversible. This, in some cases, is likely to lead to most undesirable and grave psychological consequences. Supposing in a 3-child family 1 or 2 children die during an epidemic or accident. The parents who can have no more issue may become highly psychotic. The same thing is likely to happen if in the event of dissolution of marriage the sterilised partner and in the event of death the sterilised survivor, wants to remarry and beget children. Another disadvantage is that sterilisation does not give the right to every family to have children by their own choice at well-spaced intervals. Before the operation the children come by their own choice and after it they do not come at all. The operation ensures only one thing, viz., no more children, i.e., birth control in a negative sense and not planned parenthood.

Sterilisation is not the measure of choice for all times to come but until some measure equally effective, more practicable and responsible is discovered facilities may be provided for it to whoever needs it. Keeping in view its serious disadvantages, all pros and cons of it should be explained to men and women sufficiently clearly before it is undertaken.

Some demand that in the event of a contraceptive failure, facilities should be provided to do away with an unwanted pregnancy. In other words, abortion should be legalised as birth control measure. The moment an ovum is fertilised the life of a human being begins. The only justification for taking that life is when the life of the mother is in danger and no other. It will be an evil day if abortion was legalised for birth control or for any other purpose. It will throw open the flood gates of criminality and immorality.

AMIR CHAND

CURRENT MEDICAL LITERATURE

Aetiology of Hypertension in Toxaemia of Pregnancy

HUNTER, C. A., JR. AND HOWARD, W. F. (*Am. J. Obst. & Gynec.*, **81** : 441, 1961) from the Department of Obstetrics and Gynaecology, Indiana University Medical Centre and Marion County General Hospital, write :

A pressor substance (hysterotonin) has been demonstrated in the decidua obtained from patients with hydatid mole with superimposed toxaemia. No hysterotonin has been observed in decidua from normotensive patients with hydatid mole.

Vasopressor substances have been demonstrated in the maternal plasma of patients with toxaemia. In eclampsia there seem to be two pressor substances, one is heat-stabile and has many of the same pharmacologic properties of hysterotonin, and the other is heat-labile and has many characteristics of the renin-like pressor system. To date, only one pressor substance (heat-stabile) has been demonstrated in pre-eclampsia.

The reduction of an elevated intra-uterine pressure by withdrawal of amniotic fluid in toxaemic individuals results in marked fall in the maternal blood pressure.

Hypoxia is the underlying common denominator responsible for the release of hysterotonin in the uterus in toxaemia. The hypertension of toxaemia of pregnancy is due to these pressor substances in the maternal circulation.

Jaundice in Pregnancy

SHEEHAN, H. L. (*Am. J. Obst. & Gynec.*, **81** : 427, 1961) from the Department of Pathology, University of Liverpool, England, writes :

A review is given of the types of jaundice which occur in pregnancy. This is based on an analysis of 34 clinical cases with recovery and of 50 fatal cases with autopsy.

Vomiting of late pregnancy may be caused by (a) infective hepatitis or its virulent form, true acute yellow atrophy, (b) "cholostatic hepatossis, (c) the special type of acute hepatic failure without massive necrosis which is known as obstetric acute yellow atrophy or fatty metamorphosis of the liver in pregnancy, (d) pyonephrosis or pyelonephritis, or (e) some idiopathic factor.

Hyperemesis is not a cause of significant jaundice.

There is no aetiological relationship of gallstones to pregnancy, but pregnant patients may develop obstructive jaundice due to gallstones.

Haemolytic jaundice occurs in about 10 per cent of patients who die after eclampsia. It is also seen after incompatible transfusion and some abortions, and as a result of ordinary medical causes.

Delayed chloroform poisoning is rare nowadays, but accounts for many of the cases of jaundice reported in the early literature.

Sepsis is a rare cause of jaundice, and this only as a mild terminal condition.

The other causes of jaundice in pregnancy are relatively unimportant.

Dyspareunia Following Vaginal Operations

FRANCIS, W. J. A. AND JEFFCOATE, T. N. A. (*J. Obst. & Gynaec. Brit. Emp.*, **68** : 1, 1961) from the Department of Obstetrics and Gynaecology, The University of Liverpool, write :

Apareunia and dyspareunia are commonly found after operations for prolapse. Approximately 50 per cent women do not practise coitus at all or do so infrequently and with discomfort following operations of this type. In half of these, however, the explanation is loss of libido on the part of husband or wife and sometimes definite impotence. These symptoms are generally a manifestation of advancing years or deterioration in health and are often present before the operation. Indeed, 25 per cent of married women subjected to repair operations or vaginal hysterectomy have, for various reasons, ceased to have coitus before operation.

A certain number of patients avoid coitus following these operations because subsequently they suffer from apareunia or dyspareunia because the vagina is too narrow. This narrowing is partly due to senile atrophy, a normal physiological process, and party because posterior colpoperineorrhaphy is combined with anterior colporrhaphy. Posterior colpoperineorrhaphy should therefore be avoided in all cases except where there is a clear indication such as the presence of a demonstrable and symptom-causing rectocele. Even then the amount of tissue removed should be judged in relation to the fact that the patient is at an age when senile atrophy will supervene in the ensuing few years.

Shortening of the vagina and tender scars, resulting from repair operations and from vaginal hysterectomy, are not significant causes of post-operative dyspareunia. If care is taken, shortening of the vagina can be generally avoided but difficulty can arise because women with uterine prolapse sometimes have congenitally short vaginas.

Vaginal adhesions should be broken down 2 to 3 weeks after operation and, 6 weeks after operation, the patient should be re-examined and then given specific instructions about the resumption of coitus.

Attention to these points offers a prospect of reducing the incidence of post-operative dyspareunia by approximately 50 per cent.

The series reported here extends over several years. The incidence of apareunia and dyspareunia was higher in the earlier than in the later cases because it is only with increasing experience that the considerations here put forward were appreciated.

C.S.F. Gamma Globulin in Multiple Sclerosis and other Neurologic Diseases

IVERS, R. R., MCKENZIE, B. F., M. GUCKIN, W. F. AND GOLDSTEIN, N. P. (*J.A.M.A.*, **176** : 515, 1961) from the sections of neurology and biochemistry, Mayo Clinic and Mayo Foundation, write :

In the presence of multiple sclerosis, the amount of gamma globulin in the lumbar cerebrospinal fluid was increased significantly in 72 per cent of 144 typical cases

and in 54 per cent of 52 patients who had histories of unremitting disease or initial attacks.

The cerebrospinal fluid of patients with typical multiple sclerosis showed pleocytosis of more than 5 cells per cubic millimeter in 45 per cent, a total protein content greater than 50 mg. per 100 ml. in 34 per cent, and abnormal colloidal-gold curves in 33 per cent. In cerebrospinal fluid, increases in gamma globulin correlated with elevated cell counts and abnormal colloidal-gold curves but did not correlate with the levels of total protein. There is less likely to be increased gamma globulin early in multiple sclerosis than later, but no correlation is present with the activity of the disease.

The cerebrospinal-fluid gamma globulin often is increased in encephalitis, syphilis of the central nervous system, and fungous meningitis and in association with systemic diseases in which the level of serum gamma globulin is greatly increased. It is not increased in cerebellar and spinocerebellar ataxia, amyotrophic lateral sclerosis, and cerebrovascular insufficiency.

An increase in the gamma-globulin fraction of cerebrospinal fluid is more sensitive and reliable than the other laboratory criteria commonly used as aids in the diagnosis of multiple sclerosis.

Sudden Death from Coronary Disease

ADELSON, L. AND HOFFMAN, W. (*J.A.M.A.*, **176** : 129, 1961) from the Laboratory of the Cuyahoga County Coroner's Office and the Institute of Pathology of Western Reserve University School of Medicine, give in the following lines the summary of their observations :

Five hundred consecutive sudden deaths ascribed to coronary sclerotic heart disease after complete autopsy were studied. The subjects' ages at death ranged from the third through the ninth decades, and the majority were white men, far in excess of their proportion in the general population. Occupation and obesity appear to be without aetiologic significance in the precipitation of the fatal episode. While severe muscular effort or violent emotional disturbance were undoubtedly responsible for fatal collapse in some instances, the bulk of our sudden deaths occurred without participation of these factors.

Approximately one-third of our hearts had a recent coronary thrombosis and/or acute myocardial infarct. The remaining two-thirds had no "new" anatomic disease. Recent coronary thrombi were found more frequently in the younger age groups. Two hundred seventy-five hearts (55 per cent) had one or more healed infarcts, and the incidence of healed infarcts increased progressively with age, as did heart weight.

The majority of sudden deaths from coronary sclerotic heart disease are caused by a lethal mechanism which arises independently of recent vascular occlusion or myocardial damage. Differential oxygenation of various portions of the myocardium creates a state of electrical instability, which then triggers the fatal arrhythmia ('self-electrocution').

Twenty-six per cent of our victims of coronary disease died with an intact myocardium. In this group and in many hearts with well-healed remote infarcts, the myocardium appears to be capable of many years of good function if the heart beat can be restored. Positive measures to initiate heart action (manual cardiac compression, electrical stimulation) should be instituted immediately after the 'fatal' episode by trained medical personnel who may be in attendance.

Rheumatoid Arthritis and Corticosteroid Therapy

BERNTSEN, C. A. AND FREYBERG, R. (*Ann. Int. Med.*, **54** : 938, 1961) from the Department of Medicine, The New York Hospital—Cornell Medical Centre and The Hospital for Special Surgery, New York, N.Y., from a comparative analysis of 183 cases of rheumatoid arthritis treated with corticosteroid in 5 years or more observe :

This study describes the status of rheumatoid patients after five or more years of continuous, partially suppressive corticosteroid treatment. The partially suppressive dosage of corticosteroid was distinctly beneficial in that functional capacity was maintained in most and even improved in some of the patients. Moreover, functional capacity was maintained even though the group receiving corticosteroids included patients with more advanced disease than were in two other groups of patients treated with other measures, without the use of corticosteroids.

However, corticosteroid treatment as administered to these patients failed to have an important effect in checking the progress of the rheumatoid disease. Joint destruction from rheumatoid disease progressed irrespective of treatment as it was employed, and the end status of patients after corticosteroid treatment was similar to the status of patients treated otherwise.

Serious complicating illness and deaths have resulted from prolonged use of corticosteroids although used in only partially suppressive dosage. The hazards need to be weighed with the capacity of corticosteroid drugs to relieve pain and aid function in order to obtain a balance appraisal of their effects.

Bile-Acids in Pruritus of Jaundice

CAREY, J. B. JR. AND WILLIAMS, G. (*J.A.M.A.*, **176** : 432, 1961) from the Department of Medicine, University of Minnesota Medical School, Rochester, write :

A strongly basic anion exchange resin which forms a non-absorbable complex with bile acids in the intestine is effective in lowering the bile acid concentration in the blood in jaundiced patients with pruritus when significant amounts of bile are entering the intestine, as in cases of primary biliary cirrhosis or incomplete biliary obstruction.

Coincident with the lowering of serum bile acid concentrations the pruritus ceases. This observation supports but does not prove the hypothesis that bile acids are involved in the pruritus of jaundice.

Since the resin binds only the bile acids which enter the intestine, it would not be expected to lower the serum bile acids or relieve pruritus in patients with a high grade or complete exclusion of bile from the intestine. Thus, in patients with complete, carcinomatous biliary obstruction the resin had no effect on the serum bile acid concentration, or on the pruritus.

CURRENT TOPIC

VASECTOMY

Sterilisation of the Male

G. M. PHADKE, F.R.C.S. (ENG.)

Honorary Director
Family Welfare Bureau of F.P.A. India
Bombay

The rapid increase in population of India has been a matter of great concern to the Union Government. A provision of Rs. 25 crores has been made in the Third Five Year Plan to implement measures to stabilise the population, consistent with the national economy. Many family planning clinics have been opened in different parts of the country, where advice is given free of charge. Mechanical and chemical contraceptives are given free or at subsidised rates. Research is encouraged to discover inexpensive, acceptable, harmless, and effective contraceptives to be used locally or orally.

An ideal contraceptive has not yet been discovered. Those that are recommended are costly and inconvenient to use due to poverty and lack of privacy in the overcrowded dwellings of the people of the under developed countries. Under these circumstances safe, reliable and comparatively cheap method is sterilisation operation in either sex. An operation in the male is a minor procedure. It is carried out under local anaesthesia, takes only a quarter of an hour to perform and the patient is ambulatory throughout the post-operative period.

Any operation on the sex organ, however, is associated with certain misgivings among the lay public. They are under the impression that any procedure, which ensures a permanent result in the matter of preventing future pregnancies, is sure to bring about some derangement in the physiology of the organs of reproduction and especially in their sexual function. Men in particular fear that this might lead to impotence, mental derangement or physical weakness in general.

The minor operation of vasectomy consists of closure of the small duct (Vas) through which spermatozoa pass from the testes to the seminal vesicles and the prostate, situated at the neck of the urinary bladder. The secretion of the testis, containing sperms, mixes with those of the other glands mentioned above, to constitute the semen. It has been estimated that the contribution of the testis is about 1/10 of the amount of the ejaculated semen. So, for practical purposes the amount of the semen, that comes out after the operation will be almost the same as before surgery. This must be pointed out to the patients before operation, as some of them imagine that the quantity of the semen diminishes after vasectomy.

As no gland or an organ is removed in this operation, no sexual derangement is likely to happen. Many patients were seen in whom these ducts were closed by an inflammatory disease like gonorrhoea or tuberculosis or absent congenitally. In none of them any deterioration in the sexual function or vigour was observed. On the contrary, such patients had a normal libido (sexual desire) and were able to have normal coitus. Their only abnormality was the total absence of spermatozoa in the semen. On the basis of such findings, the medical profession has been advocating vasectomy in the males as a sure method of preventing future pregnancies,

Another fallacious belief among medical men and the lay public is that vasectomy brings about rejuvenation, a theory originally propounded by Steinach. According to him, after this operation, the seminiferous tubules of the testis get degenerated, as a result of back-pressure due to the accumulation of the sperms at the site of obstruction, and thus stop producing spermatozoa. These tubules atrophy in course of time and allow more room for the adjacent interstitial cells, the Leydig cells, to hypertrophy. As these are responsible to produce the male sex hormone (androgen), the quantity of the latter is increased due to hypertrophy, resulting in the sense of well being in general amounting to rejuvenation. There is no scientific basic for this, as will be evident from the following observation.

Many cases of congenitally absent vas as well as others in whom it was blocked as a result of previous inflammatory diseases were seen during the present study. They had one thing in common with vasectomised individuals i.e. absence of spermatozoa in their semen. The morphology of the testes in all of them by 'testicular biopsy' was studied but evidence of degeneration of the tubules or hypertrophy of the Leydig cells was not observed in any case. On the contrary, active spermatogenesis was seen in almost all the tubules. Such sperms accumulated in the epididymis and died in course of time. Their products were removed by phagocytes. There is thus neither clinical nor histological proof that rejuvenation takes place as a result of vasectomy. Some patients, however, do get a sense of well being after this operation. This may be psychological as a result of the removal of fear of impregnating a woman in future.

Indications for Vasectomy

The indications are :

1. To prevent future pregnancy because of a large number of children or due to poor health of wife.
2. To prevent spreading of infection to the epididymis after prostatic surgery.

There is a third indication, as mentioned in some text books. It is to bring about *rejuvenation* and may be condemned for reasons already stated above.

The second indication does not concern us here. The first one requires some qualification. It must be understood that this operation is not a method of spacing children, i.e., family planning but is a method of family limitation, when no further children are desirable. Although it is possible to rejoin the vas after vasectomy we are of the opinion that for practical purposes this operation should be considered irreversible and hence great care is taken in the selection of cases suitable for this operation.

The minimum number of children in the family should be three. If it is found to be very essential to

prevent future pregnancies after the birth of the second child, the age of latter should be at least three, before resort to surgery is contemplated.

The age of the man should be 35 or over. At a younger age he may decide to marry again and may disappoint his second wife. There are no physiological disturbances after this operation and it can safely be undertaken at any age, but the uncertainty of reunion of the vas, in case it is indicated, is the only contra-indication for this operation to be done at an earlier age.

The person should be mentally stable. Some patients are very introspective and attribute all sorts of symptoms to this operation. At the time of the first interview before the operation, everything should be explained to him and his doubt should be removed. If there is any suggestion that the person is wavering in his mind and does not know what to do, it is far better to leave him alone and not carry out any surgery against his conviction. These are the types of people, who bring this operation into disrepute and will do a great deal of harm to our cause.

Apart from the facts stated above, it is possible that the economic status of the family as well as the health of the mother may suggest an operation at an earlier period in occasional cases. The scope of this operation may be extended to those cases with definite history of hereditary diseases such as epilepsy or diseases like leprosy in one or the other partner, in the interest of future generation.

A written declaration should be obtained from both husband and wife, that they do not desire to have any more children in order to bring up their living children properly and that they have been fully informed that this is a permanent method. They should declare that they are happily accepting it and are responsible for their decision.

Technique of Vasectomy

A sterilisation operation in the male is a simple procedure. The essential steps of the operation can be mastered by a family physician in a short time, so that he will be able to carry this out in his clinic.

Appliances necessary are :—(For one operation)

1. Sterile towels—2.
2. Towel clips—2.
3. One per cent (Sterilised) procaine hydrochloride solution—10 c.c.
4. A 10 c.c. B.D. syringe, with very fine needle No. 26.
5. Artery forceps of small curved mosquito type—4.
6. A pair of small dissecting forceps.
7. Fine Allis's forceps—2.
8. A small bladed knife or a Bard-Perker with blade number 15.
9. A fine pair of scissors.
10. Fine straight cutting needle for the skin.
11. Cotton thread No. 50 & 100 for ligature and suture.
12. Sterilised rubber gloves, two pair of suitable sizes.
13. Sterile dressings.
14. "T" bandage or a triangular shaped suspenders used by wrestlers.

The skin of the scrotum is shaved and cleaned in the usual way and some antiseptic is applied. The area is draped with sterile towels, secured in place with clips. The cord is carefully grasped between the fingers of both the hands, and the vas is identified. It is a cord like firm structure and can easily be detected and separated from other components of the spermatic cord. It is a very slippery structure and unless the spermatic cord is stretched down and kept taut by the assistant, the vas can easily slip away from the fingers. While the assistant pulls the cord and keeps it stretched, the surgeon grasps the vas between the thumb and the middle finger of the left hand. The index finger stretches the skin over the vas, which can be palpated with ease, but can with the same ease slip out if any deliberate palpation is used to feel the vas. The latter can still be held more firmly by a simple manoeuvre of pushing the tip of the middle finger, towards the surgeon, so that the structures over it are made more prominent, and a ridge made by the vas can occasionally be very easily seen (Fig. 1a).

Fig. 1.

While the vas is thus held between the fingers of the left hand, 2 to 5 c.c. of the procaine solution are injected into and under the skin over the vas. Addi-

tional quantity is injected into the deeper tissues around the vas still held between the fingers.

A tiny incision, quarter of an inch long, is made in the skin transversely over the vas. It is deepened so as to cut the Dartos muscle and some areolar tissue over the vas. Having appreciated the approximate position of the vas deep in the centre of the wound, point of a curved mosquito forceps (closed) is thrust into the tissues on one side of the vas, and the blades of the forceps are opened (Fig. 1b). A similar manoeuvre is carried out on the other side of the vas. This step makes the vas more prominent, so much so that it is now easily grasped by the Allis's forceps (Fig. 1c). The fingers of the left hand are now released. An attempt is made to pull the vas out of the tiny wound with the Allis's forceps. A longitudinal incision over the most prominent portion of the vas in the grasp of the forceps, will separate some of the adherent tissues and the pearl-white structure of the vas will come into view. This is grasped with the second Allis's forceps when an appreciable loop of the vas will come out of the wound (Fig. 1d). With a few strokes by the tip of the small knife, the vas can be cleared of adherent structures. The artery to the vas will be seen in this. An attempt should be made to clear it, but in case it tears and bleeds, it can be removed along with the portion of the vas. I have never wasted too much time in separating this structure. It ruptures invariably and requires ligaturing. No harm can arise even if this artery to the vas is cut and tied.

Two artery forceps are now applied to the loop of the vas, at a distance of one inch or so. The vas between is cut away and the ends are tied with No. 50 cotton thread (Fig. 1e). The ends of the latter are kept long and held in the artery forceps. No attempt is made to bring the cut ends of the vas together. The ends of the vas are now allowed to retract into the wound. If blood wells up, the threads are pulled out to expose the cut ends of the vas. Bleeding points are seen and tied. In most cases the blood comes from the edges of the wound in the skin. After the bleeding is controlled, the long threads are cut and the ends of the vas are allowed to retract into the wound. The small incision in the skin is closed with one stitch of cotton thread. Similar procedure is carried out on the other side (Fig. 1f).

The scrotum is supported over sterile dressings with the help of a suspender or a "T" bandage and the patient is sent home. It is surprising how little inconvenience is produced by this technique. In case some pain is felt, a tablet of aspirin along with tightening of the support will bring about relief. The patients are asked to take complete physical rest for the next two days at home.

The stitches are removed at the end of 48 hours, after which the patient is allowed to take a bath. No special care of the skin of the scrotum is necessary, except to wipe it clean with spirit and keep it dry with some talc powder. The scrotal support is worn for a fortnight, after which it may be discarded. In case the patient gets some dragging sensation, the suspender may be worn again for the next few days. In my opinion early removal of the stitches in the skin, of a constantly moist area, has been responsible in preventing stitch abscesses and deeper infections. The skin of the scrotum is quite lax and there is no danger of the wound breaking down after two days.

If a small hydrocele is present, it may be ignored, provided there is enough space above it, to grasp the cord, otherwise it may be tapped with a needle, same as the one used for intravenous therapy.

At times a firm cord-like structure is felt in the pampiniform plexus as a result of old thrombosis, which may be mistaken for a vas. A little careful palpation will show that this cannot be separated from the structures of the cord, like the vas. However, if this is mistaken for a vas, the operation will be a failure. The presence of such a cord like structure gives an impression of a second vas. I have not come across a single case of a double vas so far. In order to avoid the unpleasantness of tying some other structure instead of the vas, it is better to insist on getting the semen examined at the end of two months or so, in each case.

Complications—The only local complications met with after the operation are haematoma formation and sepsis. Rest in bed with a support will help in resolving the clot. If temperature accompanies the swelling some infection is to be suspected. It can be treated on usual lines with rest and antibiotics. If temperature still persists it may require incision and drainage. The frequency of these complications are so small (1·4 per cent in 655 cases) that it should not frighten the doctor. Complete rest at home should be insisted upon for the first two days and the stitches removed at the end of 48 hours.

Special post-operative care—Only precaution to be taken during the few weeks after the vasectomy operation is that the patient must not indulge in sexual intercourse until the spermatozoa in the seminal vesicles are out of the system. If this is not effected through nocturnal emissions or by masturbation, coitus with some contraceptive like a condom, will have to be resorted to. It takes about 8 weeks before the ejaculate is free from any trace of spermatozoa. We studied the semen every 15 days after the vasectomy in our earlier series and found that the number of spermatozoa decreases first, followed by diminution in their motility. An occasional non-motile sperm is seen at the end of the second month. Such a specimen cannot fertilise an ovum. However, to be on the safe side, patients are advised to observe continence for an additional period of 4 weeks or use some contraceptives. Real test of safety is the microscopical examination of the semen. Those patients who stay up-country and have no facilities to get the semen examined, are advised to observe continence for a period of three months.

Results

Follow-up of Cases after Vasectomy

In order to assess the late results of this operation, a questionnaire was prepared and sent to those whose addresses were known, or sent to the medical practi-

tioners to be distributed among their vasectomised patients. Out of 2,000 such papers sent, we have received 655 replies. Of the rest a large majority did not want to disclose their identity. Many of them saw their family physicians and told them verbally about the benefits of this operation in every way It is gratifying to note that no permanent harmful effect on the physical, mental or sexual set-up of those patients were reported. However, we have not taken such verbal information into consideration for our study, which is based only on the documentary evidence furnished by 655 patients.

The motive for sterilisation was family limitation. In this series, no case is included, who has had the operation done within a period of one year. The replies are very interesting and encouraging.

TABLE 1—SHOWING NUMBER OF CHILDREN BEFORE OPERATION

No. of children	No. of patients
1	13
2	62
3	144
4	176
5	113
Over 5	147
Total	655

TABLE 2—SHOWING MONTHLY INCOME OF PATIENTS

Income groups	No. of cases
Below 100 Rs.	117
101 to 200	168
201 to 300	130
301 to 500	113
Over 500	79
Not stated	48
Total	655

TABLE 3—SHOWING THE AGE-GROUPS OF HUSBANDS OPERATED

Under 30	36
31—35	161
36—40	215
41—50	224
Over 50	19
Total	655

TABLE 4—SHOWING THE EFFECT OF VASECTOMY ON THE GENERAL HEALTH OF THE HUSBAND AND OF THE WIFE, AS WELL AS ON THE SEX ACT

	No change	Improved	Deteriorated
General health of husband	494 (75·4%)	151 (24·5%)	10 (1·5%)
Sex act of husband	526 (80·3%)	77 (11·7%)	52 (7·9%)
General health of wife	605 (92·4%)	30 (4·6%)	20 (3%)

1. *General health of the husband*—There was no change in 494, while 151 showed improvement in their health. This was due to the removal of fear of future pregnancies as stated by them. Seventeen patients had become stouter which was attributed by them to mental relief and better appetite. These cases constituted 99·9 per cent of the total number.

2. *General health of the wife*—No adverse effect on the health of the wife was observed. Majority were glad as the operation was done which removed a great deal of their anxiety. Thirty of them (4·6 per cent) enjoyed the coitus better, while 20 (3 per cent) were less enthusiastic about sexual intercourse.

3. *Effect on the sexual act of the husband*—They were asked to comment separately on the changes noticed by them in (i) sexual desire, (ii) sexual act and (iii) frequency of intercourse after the operation.

In 80·3 per cent there was no change, while 11·7 per cent had increased vigour and enjoyed the coitus better. In 3 cases the erections were so intense that they had to resort to perverse practices for complete satisfaction. These together comprise 603 cases out of 655 i.e. 92 per cent of the vasectomised individuals. In 52 cases there was some deterioration. A careful scrutiny of the answers given by them, showed that there was diminution either in desire or in erection or in frequency of the act, but not in all the three together in any one case. Such deterioration was not so annoying as to disrupt the relations between the wife and the husband.

Out of these 655 cases, 319 had the operation within the last 5 years, while 336 had it done 5 to 25 years before. In order to see if there has been any significant change in the health or in the sex act of the partners years later, these 336 cases were analysed.

TABLE 5—SHOWING EFFECT OF VASECTOMY DONE 5-25 YEARS BEFORE ON THE GENERAL HEALTH OF HUSBAND AND WIFE AND THE SEX ACT OF THE HUSBAND

	No change	Improved	Deteriorated
General health of husband	253 (75%)	82 (24·3%)	2 (0·6%)
Sex act of husband	288 (85·4%)	32 (9·3%)	17 (5%)
General health of wife	312 (92·8%)	17 (5%)	8 (2·3%)

Irreversibility of the Vasectomy Operation

Although this operation is supposed to be irreversible, I have rejoined the vas in 21 cases so far. Either remarriage or death of children were the indications for recorrection. A testicle in man can produce spermatozoa to a very advanced age. Therefore there is no time limit beyond which the vas cannot be joined again. As testicle is much more likely to undergo degeneration as a result of some toxic condition, a preliminary testicular biopsy study to establish the normal functioning of the organ should be done before the rejoining procedure is undertaken. Seven patients out of the small series of twenty, have had the vasectomy done 8 to 12 years previously.

Table 6—Showing Results of Re-anastomosis of the Vas

	No. of cases
Operated	21
Operation unsuccessful	1
Could not be followed up	2
Sperms reappeared in semen after re-anastomosis	18*

* Of these 11 impregnated their wives.

Comment

Taking the physiology of the sexual organs into consideration, I am of the opinion that vasectomy cannot bring about impotence. This is the result of psychological disturbance as is evident in many other cases who seek our advice for impotence, and none of them are operated upon nor have they had any surgical interference done to their genital organs. I am firmly convinced that symptoms of impotency in its varied manifestations are met with some time or other during the married life of each man. Some of the vasectomised individuals have offered some explanations for the slight deterioration in the sexual function, such as advancing age, financial worries etc. It is very significant to note, however, that in spite of some minor changes in the sexual behaviour, all of them recommend this operation very strongly as the only safe and reliable method of contraception. Many of them were sorry that they did not know nor were told about this method before. They were dissatisfied with other methods of contraception, and have advised their friends to get it done. Some have categorically stated that no harmful effects take place bodily, mentally and generally after vasectomy and strongly recommend this operation rather than its counterpart in the female, as a measure which should be given a prior place in the field of family planning.

The highly satisfactory results of the anastomotic operation of the vas in a small series of cases of the present study are very encouraging. With additional experience the percentage of success will improve. This will go a long way to persuade patients to get the operation of vasectomy done.

A word of warning to those medical men and social workers who will be engaged in this campaign, is very necessary. Although this is a minor operation, greatest care must be taken to be very sympathetic with the patients. Only experienced men should undertake this kind of surgery. Painful complications or any mishap, howsoever small, must be attended to at once. A slight neglect in this field will drive the patients away, who may even start a propaganda against this form of sterilisation, which will do a great deal of harm to our cause.—*Adapted by the author from his original article issued by the Central Health Education Bureau, Ministry of Health, Government of India.*

NOTES AND NEWS

WMA Meeting to See Medical Films from 11 Nations

Outstanding medical motion pictures representing eleven nations on four continents will comprise the International Film Programme at the Fifteenth Assembly for The World Medical Association which convenes in Rio de Janeiro, September 14.

The film programme is a co-operative effort of The World Medical Association, the American Medical Association and the Brazilian Medical Association. It was organised under the direction of Mr. Ralph P. Creer, Director of the AMA's Department of Medical Motion Pictures and Television.

While all of the films are oriented toward highly specialised physician training, some of them involve subject matter which because of publicity is more or less familiar to the general public.

'External Cardiac Massage', for example, from the John Hopkins Medical Institution, Baltimore, describes the recently developed technique for restoring arrested heart beat without opening the chest. The programme will also include a motion picture on 'Resuscitation of the Newborn', prepared by a special committee on infant mortality of the Medical Society of the County of New York.

Two French physicians are the authors of a film showing the kinds of accidents to which athletes are prone, and how the physician through effective early treatment can prevent athletic injuries from developing serious or chronic problems.

A problem of widespread concern in current hospital practice as it affects the newborn infant, the hazard of infections due to antibiotic-resistant staphylococci, will also be the subject of a half-hour motion picture. Entitled 'Nursery Sepsis', the colour film uses live sequences, animations, laboratory scenes and graphs to dramatise the problem of infection in the hospital nursery, how to cope with it and to prevent it. 'Nursery Sepsis' is produced by the American Academy of Paediatrics under a grant from Johnson and Johnson, New Brunswick, New Jersey.

Leading medical organisations cooperated in the preparation of 'Nursery Sepsis'. These include the Paediatric Section and the Committee on Maternal and

Child Welfare of the American Medical Association, the American Hospital Association, the American Nurses Association and the National League for Nursing. The film was produced by Churchhill-Wexler Film Productions.

Health and Tuberculosis Conference, Ibadan, Nigeria

The Chest and Heart Association, with the co-operation of the Federal Government of Nigeria and by kind invitation of the University College, Ibadan, is sponsoring a Health and Tuberculosis Conference to be held at the University College, Ibadan, Nigeria from the 26th—31st March, 1962.

This is a completely new venture to encourage all workers in the field of tuberculosis in Africa. This is the sixth in the series of Commonwealth Conferences which have previously been held in London.

Among the speakers will be eminent chest physicians from Great Britain and all parts of the world. The programme will include lectures and panel discussions on Tuberculosis the greatest tropical menace; Tuberculosis and Leprosy; Community infection—cause and remedy; Drugs—their value and limitations; The techniques of community surveys; Non-pulmonary tuberculosis; Travelling clinics and village hygiene.

Further details should be had from the Conference Secretary, The Chest and Heart Association, Tavistock House North, Tavistock Square, London, W.C. 1.

Control of Filariasis

Recent developments in the fight against filariasis in various parts of the world were reviewed by WHO's First Expert Committee on Filariasis which met in Geneva from 25 July to 1 August. Dr. John F. Kessel, Director, Pacific Tropic Diseases Project, Los Angeles, was Chairman of the Committee and Dr. N. G. S. Raghavan, Deputy Director, Malaria Institute of India, was Vice-Chairman.

The world's filaria victims, an estimated 200 million, are found in endemic areas of Central and South America, Africa, India, Central China and the islands of the Pacific.

Filariasis is spread by many species of blood-sucking mosquitoes which carry the disease parasites from man to man. The most common and widespread is *Culex fatigans* but there are many others, and scientists are by no means sure which, among the many species, are active in a particular area nor do they always know the exact role played by the mosquito in the transmission of different forms of the disease.

Various methods of treatment are, however, being tried. A very promising trial was carried out by a Franco-American team in Tahiti, which indicates that diethylcarbamazine given in monthly doses, along with mosquito control, is the most rapid and practical way of dealing with and eventually controlling the disease.

The Committee considered the use of different insecticides for the control of mosquito vectors because it is known that *Culex fatigans* quickly develops resistance to DDT and similar insecticides. It also discussed the questions of biological control of mosquitoes by controlling the plants and animals necessary for their development and the adaptation of control measures to suit particular environmental conditions.

Shortage of Medical Personnel in U.K.

A Government report just issued concerning the health service in the United Kingdom states that 50 per cent of doctors working in the north of England come from overseas. The report reveals that of a total of 8,272 doctors manning hospitals in England and Wales, 3,408 were born outside the U.K. Another shortage is that of midwives. A drive to coax back about 20,000 midwives is being launched by the Central Midwives Board. They aim at those qualified women who have left the service after marriage.

Cancer Linked with Breast-Feeding

A London specialist was quoted as suggesting a link between cancer of the breast and the period of breast-feeding a baby.

Mr. Hedley Atkins, Director of the surgical department of Guys Hospital now visiting Japan, said he believed Japanese women's comparative freedom from this type of cancer was somehow connected with the traditionally long period of breast-feeding.

Mainichi Daily News quoted him as saying at Kobe, West Japan, that he wanted to check reports of a gradual increase in breast cancer since some Japanese women had begun adopting Western ways of shortening the period of natural feeding.

He was reported as saying that while in Europe about 3 per cent of women over 35 suffered from breast cancer, the Japanese figure was only a fraction of this, well under 1 per cent.

Committee for Post-Graduate Medical Studies

The Government of India have appointed a Medical Education Committee for post-graduate studies. The Committee which is composed of members of the Medical Council of India will prescribe standards of post-graduate medical education for the guidance of the universities and will advise them in the matter of securing uniform standards.

The Committee consists of Dr. B. C. Roy, Chief Minister, West Bengal, Dr. C. S. Patel, President, Medical Council of India, Dr. P. N. Wahi, Principal, S. N. Medical College, Agra, Dr. Jivraj N. Mehta, Chief Minister, Gujarat, Dr. Santokh Singh Anand, Principal, Medical College, Amritsar, Dr. R. V. Sathe, Bombay, Dr. K. V. Rao, Director of Medical Services, Andhra Pradesh, Col. B. L. Taneja, Principal, Maulana Azad Medical College, New Delhi, and Dr. A. V. Baliga, Chairman, Society for the Rehabilitation of Crippled Children.

Progress in Medical and Health Services in India

Today, there are about 12,600 hospitals and dispensaries with about 1,60,000 beds in the country. New

institutions have sprung up for treatment of the age-old afflictions of leprosy and tuberculosis.

Tuberculosis ranks high as a public health problem owing to its high morbidity rate. A recent survey has revealed that there may be about five million cases of tuberculosis of lungs, of which 1·5 million are probably infectious.

The anti-T.B. programme envisages BCG vaccination on a mass scale, the establishment of clinics and provision of beds for isolation and treatment of T.B. cases. There are now about 30,000 beds for T.B. patients.

A national tuberculosis institute for research, training and administration has been opened at Bangalore with the assistance of United Nations International Children's Emergency Fund and World Health Organisation.

It is estimated that about two million persons are suffering from leprosy. Of these, half a million are infectious. During the last decade, owing to availability of effective drugs the emphasis has shifted from institutional care to early detection and domiciliary treatment.

During the Third Plan, an extensive coverage has been proposed to deal with this disease. Besides establishment of control units and training centres, a number of rehabilitation centres to look after the physical, psychological and social rehabilitation of the persons affected would also be set up.

The problem of cancer calls for all-round approach. The State Governments are being assisted to establish cancer wards and units in the existing hospitals to provide better clinical service to cancer patients.

While physical facilities are important, it is equally essential to have trained and competent doctors and other personnel to man the hospitals. There are at present about 60 medical colleges, but more are needed to approach a satisfactory doctor-population ratio.

Teaching hospitals, which are the vital focal points of education for the health profession, number about 110. They also form the nucleus of much of the clinical research necessary for the advancement of medical and public health.

Primary Health Units

In order to make health services available to the mass of our people in the villages, a programme of establishing primary health units has been evolved.

The country has been divided, for this purpose, into 5,000 blocks (each block serving roughly a population of about 66,000) through the Community Development Programme, and each block will have one primary health centre.

The primary health units provide both preventive and curative services to the community in an integrated manner.

The very fact that improved health services have reduced the mortality rate has created the huge problem of rapid rate of population increase. Unless stability is reached between death rate and birth rate all plans may be defeated. For this purpose the programme of family planning is being taken up in a very big way. The aim is to have family planning accepted as a philosophy and way of life by the bulk of the population.

Cholera Vaccine from Kasauli Flown to Kuching (Sarawak)

An emergency supply of 100,000 c.c. of cholera vaccine was flown on July 22, 1961 from Kasauli (India) to Kuching (Sarawak) in an operation which involved contacts between four world capitals—New Delhi, Geneva, London and Manila—and took not more than 24 hours to organise.

Health authorities in Kuching, faced with an emergency, asked WHO's Western Pacific Regional Office in Manila for a supply of cholera vaccine. The Manila Office sent an s.o.s. to WHO Headquarters in Geneva who in turn asked the Regional Office in New Delhi to confirm from the Government of India if the order could be filled by the Central Research Institute in Kasauli, which had proved of great help on such occasions in the past.

Contacted the Director of the Institute agreed to supply the vaccine but wanted the consignment to be picked up within 24 hours. This could, however, be done and the consignment was weighed, labelled, sealed and loaded into the plane, just in time.

Efficacy of D.D.T.

Mosquito and fly resistance to DDT has not been reported in India, according to a Calcutta entomologist. This insecticide and other chlorinated hydrocarbons cannot be used, however, for space spraying to kill flying insects. Such insecticides have residual effects only.

Manufactured insecticides used for space spraying contain little or no pyrethrum extract, the best agent for space spraying. Pyrethrum has immediate toxic effect on insects which come in contact with it, its only disadvantage being that it has no residual toxicity. It is also expensive and loses its efficacy when exposed to sunlight and atmospheric humidity. Decomposition sets in as it comes in contact with acids, alkalies, heat and oxidising agents.

Culicine mosquitoes, some of which are not only disease-carrying but annoying because of their biting habits, particularly after dusk enter houses by the million, bite people and immediately leave the premises. The anophelines, after biting, rest on walls of rooms to digest their food and are, therefore, affected and killed by DDT spray. Such spray is ineffective, however, in the case of culicines.

Two Lakhs of Leprosy Patients in Orissa

There are about 2 lakhs of leprosy patients in Orissa.

According to the Health Directorate till the end of the Second Five-Year Plan there were 12 leprosy colonies, 333 clinics, 16 domiciliary centres, 73 pilot projects and 844 beds in hospitals throughout the State for the treatment of leprosy patients.

Twenty more subsidiary centres are likely to be established during the Third Plan period to cover all the pockets having high incidence of leprosy, it is learnt.

Single Health Directorate for South Proposed

Union Health Minister, Sri D. P. Karmarkar, inaugurating the southern regional Health Ministers' Conference suggested the publication of periodical resume of the activities and progress of work in each State.

Reviewing the progress made in smallpox and malaria eradication, Mr. Karmarkar said Madras State had done extremely well in the eradication of malaria.

The question of setting up a single directorate of health services for the States of Madras, Andhra, Kerala and Mysore was among the subjects discussed at the conference.

Convict Blood Donors

The Andhra Pradesh Government have amended the prison rules in the State, by which a special remission of 15 days of the total sentence, shall be granted to every convict prisoner, who donates blood to a Government blood bank, in addition to the payment of gratuity at the rate of Rs. 8/- for each donation. The under-trial prisoners shall be entitled only to gratuity at the rate of Rs. 8/- for donating blood once. Every under-trial prisoner, who donates blood to a Government blood bank shall be granted the special remission of 15 days of the total sentence, if and when he is eventually convicted and sentenced to undergo imprisonment.

The Medical Officer shall grant extra diet for a period not exceeding 15 days to the prisoners, who donate blood to the Government blood bank.

Prevention of Food Adulteration Rules

Under a relevant rule of the Assam Prevention of Food Adulteration Rules, 1960, some powers of the Director of Health Services, Assam, Food (Health) Authority, have been delegated to the Deputy Director of Health Services (Public Health), Headquarters and the Public Analyst to the Government of Assam.

The D.D.H.S. will have the general powers to supervise the implementation of the Act and the Rules made thereunder effectively in all the local areas of the State.

The Public Analyst will have the powers to (i) issue necessary instructions which include matters of technical nature direct to the local authorities, Food Inspectors and other officers responsible for implementation of the Act under intimation to the Food (Health) Authority, and (ii) collect information from districts regarding prosecutions launched, fines realised and such other information as may be required by the Government of India from time to time and the District Authorities will be bound to comply with his requests. The Public Analyst will compile the information in proper proforma and forward to the Food (Health) Authority for necessary action.

Anti-Malaria Measures

The All-India Conference of State Malariologists, which recently concluded its sessions in Madras, focussed attention on the intensification of spraying operations in areas where malaria is prevalent, and held that the co-operation of the public in such operations was essential for their success, particularly in rural areas. The great need to ensure the quality of spray and supervision at all levels was emphasised.

The conference discussed surveillance operations, both active and passive. The active phase of the operations is carried out by the staff of the Anti-Malaria Organisation, which arranges house-to-house visits in order to detect malarial cases and examines blood in fever cases free of cost. The passive phase is carried out by the dispensaries and hospitals which intercept cases which may escape detecion during the active phase of surveillance operations. The conference particularly discussed the manner in which passive surveillance is to be intensified.

Co-ordination of activities of the various bodies like the defence forces and railways was discussed by the conference in detail. The steps for the control of malaria in irrigation projects, also came up for review.

Enquiry into Cases of Spread of Cholera

An epidemiological unit of the All-India Institute of Hygiene and Public Health, Government of India, is enquiring into the genesis, causes and circumstances of the spread of the cholera epidemic in Bihar sub-division of the Patna district which has taken a heavy toll of 632 human lives so far since May last and is still raging in virulent form.

Bihar Sharif is considered to be an endemic area where cholera epidemic breaks out at periodic intervals. Members of the unit are moving about in the affected areas, holding an on-the-spot enquiry, collecting data, taking samples of drinking water, food and vaccines, and studying the ways of living of the people to make a thorough probe into the epidemic situation. A field laboratory of the unit has also been set up.

Modern Eye Hospital Built by Donors

The Jamshedpur Eye Hospital, a charitable and non-profit making public institution, will shortly add 36 more beds to become the biggest of its kind within a radius of 200 miles.

The Jamshedpur Eye Hospital, built entirely with the donations received from industrial organisations, businessmen and philanthropic citizens, has so far cost over Rs. 5 lakhs. The total cost of the project, after the addition of another floor to the present two-storeyed building, will be about Rs. 8 lakhs.

Forty per cent of the present 64 beds will be 'entirely free' for the poor. 34 beds including the 'free' beds will be in the general ward and there will be 30 beds in 16 cabins (single and double). The money collected from the paying beds will be utilised for maintaining 'free' beds and for improving hospital facilities.

The hospital will be governed by a board of Trustees comprising of Lady Ghandy, Sir Inder Singh, Dr. K. G. S. Chhokar, Shri Biswanath Rungta and Shri Narbheram H. Kamani with Mrs. P. Prodhan as Secretary, and one Treasurer.

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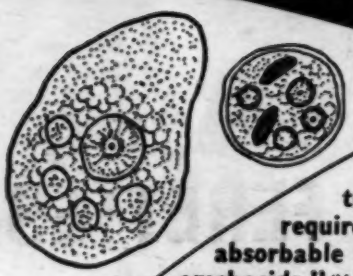

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The Population Council of India

An organisation titled The Population Council of India has been founded at Indore, Madhya Pradesh. The objects of the organisation are: (1) to educate the people of India in the understanding of the use of surgery for family planning (namely vasectomy, salpingectomy, vasorrhaphy, vasoligation, vaso-epididymostomy, etc.) and the contribution it can make towards the solution of family, community and the population problem facing the country; (2) to conduct, encourage and engage in research and fact finding studies of medical, psychological, and socio-economical aspects of the surgery for family planning, and to disseminate the factual information concerning this subject to make the subject known and popular, and (3) to provide for the poor and low income group of people, the facilities of free surgery (for family planning) in good institution, by qualified surgeons.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

Chlorpropamide as an Oral Hypoglycaemic Agent

Sir,—I have read the Editorial of your journal dated 16th May, 1961. I wish to add that in my experience I had 3 cases of liver damage after using chlorpropamide as an oral antidiabetic agent. In the first case it had been used for 3 months. In the second case for two months, and in the third, only for three weeks. After stopping the drug they recovered. All the three cases showed parenchymal damage as evidenced by liver function tests. I am, etc.,

Bangalore. S. V. GOVINDA SETTY

"A Case of 'Ramsay-Hunt Syndrome"

SIR,—The interesting case quoted by your correspondent, Dr. A. Bapiraju (*J. Indian M. A.*, **37**: 43, 1961), seems to me to be one of herpes zoster affecting the ganglia of C2, C3, C4 and C5 on the left side for the following reasons:

The absence of vesicles on the tympanic membrane, tinnitus deafness and vertigo rules out Ramsay-Hunt syndrome. The association of facial paralysis and impairment of taste on the anterior 2/3 of the left side of the tongue is not inconsistent with a lesion of the C2 ganglion. For Denny-Brown, Adams and Fitzgerald (*Arch. Neurol. & Psychiat.*, **51**: 216, 1944) demonstrated a case of Ramsay-Hunt syndrome itself in which the C2 ganglion and not the geniculate ganglion was inflamed.

Lesions of herpes zoster need not be confined to one segment alone and I have seen several cases with more than one segment involved and one case with bilateral involvement of a segment on the chest. In fact, a universal involvement has been described in literature under the head 'herpes zoster universalis'. The distinguishing feature between herpes and chickenpox in such cases is the absence of pleomorphism in addition to the prodromal and postherpetic symptoms; and one would like to know definitely about pleomorphism in this case. But from the description, I infer that the rash appeared all at a time and not in successive crops. A few vesicles seen outside the segmental distribution might be due to autoinoculation. I am etc.,

Coimbatore. K. R. KRISHNAN

Revised Pay Scales for Doctors in Punjab

SIR,—The revision of scales of pay for doctors in this State has been finalised. The scale fixed by the government is Rs. 250-750 for P.C.M.S. Class II and Rs. 750-1,250 for P.C.M.S. Class I, exclusive of allowances.

The success of the 3rd Five Year Plan depends on the availability of highly trained personnel. It was being felt by the Punjab Government that unless we had suitable professional and technical men to man the various services the successful implementation of the Third Five Year Plan will not be achieved. The medical profession in the country is considered to be the lowest paid service with the result that most of the dispensaries in the rural areas and the Primary Health Centres are without medical men. The problem of acute shortage of medical men has been engaging the serious attention of the Punjab Government resulting in this generous revision of pay scales for doctors. The following pay scales have been offered to the Medical Graduates, perhaps the highest in the country. A fresh medical graduate who offers himself to a Primary Health Centre will receive the following emoluments:

(1) Pay Rs. 250/- p.m. in the scale of Rs. 250-750.
(2) Special pay (rural health allowances) Rs. 100/- p.m.
(3) Non-practising allowance in lieu of private practice Rs. 100/- p.m. or private practice.
(4) Dearness allowance Rs. 70/- p.m.
(5) Temporary allowance Rs. 20/- p.m.

Total Rs. 540/- p.m. with a free house or Rs. 440/- with right of private practice. If he possesses postgraduate qualification he will get 1-3 increments depending upon the quality of his degree or diploma. If he joins service late in life he will get another advantage of one increment for every 3 years of his experience upto a maximum of 5. He will get another additional advantage of gratuity if he cannot earn pension. From the study of the above you will be convinced that those engaged in private practice have been offered special concessions so that they have now no excuse not to serve their country in the public sector. It is up to the young men in private practice to rise to the occasion and respond to the clarion call. The Government has done its duty to the medical profession. Now it is the duty of members of the medical profession to offer themselves in much larger numbers for posts in the P.C.M.S. II. Every type of conceivable encouragement has been given to help in the recruitment campaign. We do not wish that any dispensary or hospital should be without a doctor. We hope to fill all the vacancies in a month if the doctors now pull their weight and

demonstrate to the world that they belong to the noble fraternity which is primarily meant to provide relief to the distressed humanity both in rural as well as in urban areas, especially the former whose need is much more urgent and real. May I request you to please give it the earliest and widest publicity so that we can fill up all the existing vacancies in a month or so. I have assured the Government that the response from the medical profession will be most encouraging and the example set by the Punjab will be a great incentive to the other States in the Union. I am etc.,

(DR.) TULSI DAS
Director
Punjab. Research and Medical Education

Use of Chloramphenicol against Minor Infections

SIR,—The Food and Drug Administration authorities of the United States have recently revised the regulations governing the labelling of the drug 'Chloramphenicol' so as to include a warning on the label of the drug against its use in minor infections and calling attention to the necessity for adequate blood studies when its use is required. In the 'release' issued by the Food and Drug Administration it has been stated that Chloramphenicol which is a life-saving drug in certain severe infections such as typhoid, and some drug-resistant staphylococcal infections, infrequently produces blood disorders, some of which can be fatal. It has been pointed out that there were instances where this drug was employed in conditions in which safer and equally effective drugs or no antibiotics were indicated. The Food and Drug Administration have, therefore, imposed labelling provisions whereby it will be necessary to label the immediate container with the words 'Warning—Blood dyscrasias may be associated with the use of Chloramphenicol. It is essential that adequate blood studies be made'. In addition the package insert is also required to contain a similar warning.

As chloramphenicol preparations are widely used in India the question whether it would be desirable to impose similar labelling restrictions on chloramphenicol preparations on the lines as recommended by the Federal Food and Drug authorities in the United States was examined in consultation with the State Drug Control authorities. It has been decided to impose similar labelling restrictions on chloramphenicol preparations marketed in the country.

It is requested that due publicity to the instructions that have been issued may kindly be given in your journal so that manufacturers as well as medical practitioners in the country would be acquainted with possible dangers of chloramphenicol therapy. I am etc.,

S. K. BORKAR
New Delhi Drugs Controller (India)

International Congress of History of Medicine

SIR,—The revival of interest in the study of ancient and mediaeval systems of medicine in the last century with the opening of institutes for the teaching and research in history of medicine in Europe in the beginning of this century and in America during the last three decades has been an impetus to the various individuals and institutions interested in the subject all over the world to come together under the banner of The International Society of the History of Medicine and to organise the International Congress of History of Medicine, once in two years, in various countries having long and glorious record of civilisation including great heritage of medicine.

Ayurveda and Unani flourished in India side by side in mediaeval times. During the last 150 years Ayurveda, Unani have been rendering medical aid in different parts of the country to various strata of society. An increasing interest in the study of our history and culture has also developed.

Even after independence, the India Government has not thought of sending representatives or delegations to attend the International Congresses held in 1952, 1954, 1956, 1958 and 1960. The Indian Association of the History of Medicine has been requesting the Ministry of Health and appealing to the medical profession and the universities, to ensure India's representation at these International Congresses, where 40 to 60 nations participate and establish fruitful contacts.

The latest International Congress of History of Medicine was held in September 1960 in Greece in the twin-cities of Athens and Cos, two of the most famous centres of ancient Greek medicine. The next Congress is to be held in September 1962. The International Society of History of Medicine under whose auspices the Congress is held, is now awaiting invitations from various countries to hold the next session. It would be very gracious and appropriate if the Government of India invites the International Congress of History of Medicine to hold its next session in 1962 in India. It may be that there will be prior and more pressing invitations by other countries, but India which has till now missed an opportunity of presenting before the International Congress the great heritage of India in matters of Health, Medical relief and Medical sciences, should not lose this opportunity of extending invitation to hold the next International Congress of History of Medicine in India, so that the medical historians of the world may see and hear and appreciate the contributions of India to Medicine in ancient and mediaeval times. I am etc.,

Nizam Bagh, Dewan Devdi, D. V. SUBBA REDDY
Hyderabad, A.P.

Social Classification

SIR,—We would appreciate if any reader of your esteemed journal can inform or suggest on the social classification in India similar to the one in the United Kingdom by the Registrar General.

In India the necessity for the classification of the population into social classes is being increasingly felt in connection with the epidemiological studies of many diseases, viz., cardiovascular, metabolic, nutritional, degenerative and mental diseases, and communicable social diseases like tuberculosis, venereal diseases, leprosy, etc.

The British social class grading uses the distinctions

which arise out of working conditions alone. Its basis is the general standing of each occupation group within the community, economic circumstances not being taken into account, except in so far as they are reflected in occupation (Brockington, Fraser—World Health, 1958). The five gradings in the British social classes are :

Social Class I—Professional workers and "the generally well-to-do section of the population".
Social Class II—Intermediate between I and III.
Social Class III—Skilled artisans and analogous workers.
Social Class IV—Semiskilled—Intermediate between III and V.
Social Class V—Labourers and other unskilled occupations.

In the United Kingdom social classification by occupation works out well as the wages of each occupation are more or less fixed and known. But it seems to us that in India if importance is given only to the occupation it will not reveal the true economic status of the individual as the wages are not usually fixed, and quite an appreciable section of the population depending on trade and agriculture belongs to different economic groups. Therefore, one should take into consideration both the family occupation of a person and the economic status to decide the social class into which he or she would fall. For this reason the following social classes in India are suggested by us :

	Family occupation	Per capita income per month
Social Class I	Generally well-to-do section of the population (a) Professional workers of high status. (b) Well-to-do trading and agriculturist class.	Rs. 100 and above
Social Class II	(a) Professional workers of intermediate status (b) Intermediate trading and agriculturist class.	Rs. 50-99
Social Class III	(a) Service class like clerical workers (b) Small traders and agriculturists.	Rs. 30-49
Social Class IV	(a) Skilled artisans and analogous workers, etc.	Rs. 15-29
Social Class V	(a) Petty agriculturists, labourers and other unskilled workers.	Below Rs. 15

We would feel very happy to receive any comments or suggestions on the above proposed classification. I am etc.,

King George's Medical College
Lucknow

B. G. PRASAD

REVIEWS

Sédan's Re-educative Treatment of Suppression Amblyopia –Translated by T. Keith Lyle, C. Douthwaite and J. Wilkinson; 1960, E. & S. Livingstone, Ltd., 16 and 17 Teviot Place, Edinburgh 1; 11″×8½″, pp. 128; 25s.

The translators have done great service to the English speaking patients all over the world and specially in India by translating this excellent book by Jean Sedan. The book is divided into three parts : Part I—Proof reading and proof reading corrected : Part II—Numbers, designs, photos and corrections; and Part III—Exercises for patients with disturbances of spatial localisation. Part I contains sentences printed in letters of different sizes containing errors which the patients have to detect with the amblyopic eye. Part II contains pictures and diagrams sometimes in lines and dots all containing errors to be detected by the amblyopic eye. Besides detection of these mistakes, close study of a number of pictures and designs is required to reply to questions like "Which design is repeated twice or once in the illustration". Part III is for amblyopia with eccentric fixation.

This book should be with all ophthalmic surgeons in India.

Art and the Scientist—By Geoffrey Lapage; 1961, John Wright Sons, Ltd., Bristol; 9¼″×7¼″, pp. xii+115, with 18 illus., 22 plates, 8 in colours; 42 s.

The book discusses drawings and paintings made by men of science to illustrate either their own scientific work or that of other men of science. It deals chiefly with illustrations from works on botany, zoology and human and comparative anatomy, these being sciences in which graphic illustration is chiefly required. They are divided into descriptive, imaginative and interpretative illustrations and have been considered in the light of the artistic and printing techniques available when they were made. A bibliography has been given to indicate the source of the materials the author has chosen.

The author has considered the subject under several sections, e.g., kinds of scientific illustrations, their authors, some earlier scientific illustrations, drawings done by some scientists, some of the characteristics of scientific illustrations such as scientific qualities and artistic qualities, and the creative process in science and art. The book will serve as an incentive to scientific workers, particularly in the biological sciences, for accurate observation of details of phenomena, flavoured with an aesthetic sense. The printing and get-up are excellent.

A. C. U.

The Closed Treatment of Common Fractures—By John Charnley, B.SC., M.B., F.R.C.S.; 3rd edition, 1961; E. & S. Livingstone Ltd., Edinburgh; 9¼″×6¼″, pp. xii+272; 50 s. net.

That this stimulating monograph is already popular amongst orthopaedic and casualty surgeons is proved by its publication of the 3rd edition.

Many chapters have been recast and rewritten particularly those on the treatment of fracture tibia and on union of fractures. Emphasis is laid, rightly as it should be, on closed treatment of fractures than on operative treatment which has been and is still a rage in many countries. The legitimate indications of operation in the treatment of certain fractures have also been stressed.

The treatment of fractures has been an age-old problem and every surgeon has to acquire the art of 'setting' fractures from experience. Mr. Charnley has been singularly successful in helping young surgeons to acquire that art by incorporating his experiences in this lucid and illuminating book and has shown that closed treatment of fractures "can be resolved into something of a science".

His ideas of taking the help of soft tissue hinge in manipulation, biological factors in joint stiffness, padded plaster technique, Thomas splint technique specially in condylar fractures of the tibia, lower end of the femur and pertrochanteric fractures, are useful. The problems of treatment of fractures of the tibia, radius and ulna, head of the radius and fractures involving articular surfaces are discussed in a very practical way.

This very informative handbook on common fractures is recommended for surgeons, young or old. The reviewer has no hesitation in agreeing with Sir Harry Platt, who says in his foreword to the book, that there is "much in this monograph which will persuade the experienced orthopaedic surgeon to reexamine some of his most cherished presuppositions".

The get-up of the book is excellent with its 215 illustrations, some of which are in colours.

K. S. Bose

OBITUARIES

Lt. Col. T. S. Shastry

Lt. Col. Tadepalli Shankara Shastry who hailed from the Guntur District of the then Madras Province now Andhra Pradesh was born at Tadepalli on December 25, 1887 and educated at the Guntur High School. After matriculating, he came to Madras to join the Madras Christian College, passed the F.A. examination, and entered the Madras Medical College. He obtained the M.B.C.M. degree in the year 1913, went to London and qualified for the I.M.S. Col. Shastry volunteered at the first World War, and also served in the Second Great War in various capacities in Field Service in Egypt and Sudan. He headed the Malaya Mission on behalf of the Government of India with a band of doctors in the year 1945. He went to Austria in the year 1928 for a course in E.N.T.

Col. Shastry was nationalistic in his outlook and served in campaigns affecting the nation. He was a member of the Indian National Congress and was a habitual wearer of khaddar ever since 1920. He served as District Medical Officer in various districts in South India and established the District branches of I.M.A. on a sound basis. He was a forceful speaker in English and Telugu and a great Sanskrit scholar. He knew Hindi also.

Col. Shastry was the moving spirit in all the Medical Conferences. He was the Vice-President of the parent body of the Indian Medical Association; President, Madras City Branch for some time and of all the District Branches. His genius lay in bringing about the solidarity and unity in the rank and file of the profession when the District Medical Associations stood only for safeguarding and protecting the interests of members in Government Service. Through his dynamic influence these Associations became merged with the Indian Medical Association and acquired their independence in protecting and safeguarding the interests of the members of the entire profession. Thus all the credit goes to Col. Shastry as one of the chief architects of the Indian Medical Association. During the British regime when there was a ban on the Service members not to join the I.M.A., he had fought hard and got the ban removed. He spread the message of the I.M.A., along with the veteran leader Col. Bholanauth, by opening many branches in South India.

Col. Shastry passed away on June 29, 1961. He left behind his wife and three sons.

Lt. Col. T. S. Shastry

Dr. Lalit Mohan Chatterjee

Dr. Lalit Mohan Chatterjee

Dr. Lalit Mohan Chatterjee was a well reputed private practitioner of Nungi, a village of 24 Parganas, West Bengal. After passing the L.M.S. (Nat.) he started independent practice in his own native village Nungi about 38 years back. Subsequently he became a Licentiate from the Calcutta Medical School. His popularity earned him the endearing title of 'Civil Surgeon of Nungi'. He was really a friend and guide to the poor. He was a member of the local Union Board, local High School and other public organisations and a distinguished member of Nungi-Batanagar Branch, I.M.A.

Dr. Chatterjee died suddenly on 29-4-61 of coronary thrombosis, at the age of 61. He leaves behind him a widow, two sons, three daughters and a very large circle of friends and admirers to mourn his death.

SUPPLEMENT
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XIII ORISSA STATE MEDICAL CONFERENCE, 1961, BERHAMPORE

The 13th Orissa State Medical Conference was held at Berhampore (Ganjam) on May 13-14, 1961 on the occasion of the Silver Jubilee Celebration of the Berhampore Branch, I.M.A.

WELCOME ADDRESS

Welcoming the delegates, the Chairman of the Reception Committee, Dr. B. C. Bisal, Civil Surgeon, Ganjam observed that two important problems, viz., population problem and the preventive side of the diseases require immediate attention for their solution. The chronic problem of population could be successfully solved by the intensification of the Family Planning Programme; for the solution of the problem of preventive side of diseases and for raising the general standard of the people, he opined that medical relief and service, drug manufacture and its control, family planning and education and training of specialised personnel are some of the important aspects which require immediate attention. Dr. Bisal laid particular stress on the long-felt necessity of having laboratories for manufacture of smallpox vaccine and anti-rabic vaccine in the State. For, experience has shown that these vaccines, which should be kept in refrigerators, lose their potency while in transit as parcels received from other States.

Before concluding his address, Dr. Bisal observed that to meet the need for more doctors to deal with the present health problems, it is imperative that more colleges should be started in the State, besides the 2 existing colleges. In this connection, he observed "it is a matter of joy that a third Medical College may be established in this district in the near future". It may be remembered that the State Government had almost finally settled to establish a medical college in Berhampore in 1961, the 1st year of our "Third Five Year Plan".

INAUGURAL ADDRESS

Sri V. S. Mathews, I.A.S., Revenue Divisional Commissioner, Southern Division, Orissa inaugurated the Conference and the Silver Jubilee function of the Berhampur Branch of the Indian Medical Association. He congratulated the Berhampur Branch for the outstanding services done in the district and in Berhampur in particular, wished the branch every success and hoped it would enjoy a prominent position in the State. He stressed that there is a need for providing facilities to the practitioners for undergoing refresher courses to keep abreast of advances made in the medical profession. He observed that "some patients sometime experience considerable difficulties in obtaining from the doctors and health personnel in charge of their care the necessary sympathy and understanding which they need so much during their period of illness and suffering". There is great need for kindness, generosity and sympathy towards the afflicted and the sick. He stated that it is likely that Berhampur will have a medical college in the near future.

Dr. H. N. Shivapuri, President, Indian Medical Association (Central) was the Chief Guest. He said that as medical men, it is their duty to think that they shall have to play an important role in the defence of our country. Rs. 300 crores of Government help is too inadequate to meet the needs of Public Health requirements, as greater attention will have to be paid to the problem of Public Health Schemes. Family Planning deserves very serious consideration and he said how things relating to it are badly managed. He strongly pleaded for indigenous manufacture of drugs without depending on foreign help or even co-operation. He described the State patronising all kinds of medical systems; it should give recognition to one system only. Use of Antibiotics has become a laughing stock now-a-days, he said. He pleaded for making allopathic medical science more and more popular so that it can be within the each reach of the masses. Dr. Shivapuri is of opinion that the main cause for the dearth of doctors is non-payment of adequate wages or remuneration. He decried the proposal to bring forth the scheme of Licentiate course of medical training which was condemned long before.

Messages, wishing the conference success were received from Shri Y. N. Suktankar, Governor, Orissa, Dr. Thomas of G. Udayagiri Mission Hospital, Dr. P. K. Kar, Assistant Professor of Pharmacology, S. C. M. Medical College, Cuttack, Capt. (Dr.) C. Nath, Branch Recruiting Officer, Belgaum, Shri V. M. Kulkarni, Executive Officer, I.M.A., Delhi, Dr. G. V. Pattanayak, Director of Health Services, Orissa and Sri D. N. Patnaik, Superintendent of Police, Ganjam and others.

Dr. M. V. Ramanayya, Secretary of the Berhampur Branch, I.M.A., and for the last 25 years the Organising Secretary of the State Medical Conferences, read out a report in connection with the celebration of the Silver Jubilee of the Branch.

PRESIDENTIAL ADDRESS

Dr. S. C. Das, who presided over the Conference, in his presidential address said:

"It is well known that though the recommendations of the Bhore Committee were very comprehensive both as regards the long term and the short term programme, very little has been done in context of these recommendations in the intervening period. With the inauguration of the First Five Year Plan, the health problem was taken up with some seriousness. The over-all improvement during the last fourteen years cannot be considered sufficient for a proud achievement of the nation. It could be said that some improvement would have been possible even without obvious planning. Some improvement in the health conditions of the people as reported, in lower incidence of disease, decrease in infant mortality, general decline in mortality rates and increase in the expectation of life etc., is rather a vague statement when proper statistics are not available to prove the truth. It will be seen from the monthly magazine "Health Intelligence" first copy of which has seen the light of the day in April, 1961 that the lowest birth, death and infant mortality rate was recorded in Jeypur District (birth rate 7·04, death rate 3·36) and infant mortality rate 56·46 in Mayurbhanj District. If this be true it is much lower than the lowest world figure.

Unless and until conditions are established for collecting vital statistics by accurate scientific methods, the State will never know how much of actual improvement has occurred in the health standard of the people. It is stated that Orissa has the highest recorded death rate from all the major diseases taken together.

With 2 per cent increase in the population, we intend to tone up the improvement in the services as envisaged in various reports. But unless and until the rate of increase in population is not controlled, it may be well nigh difficult to control the factors leading to increase of population.

The financial outlay for health in the Third Five Year Plan does not appear to be sufficient to provide the services as envisaged under the plan. The outlay is proportionately less than what it was under the Second Five Year Plan because of the purchasing power of the rupee is steadily going down, thus making the services more expensive. In 1946, the Bhore Committee recommended "It should be a statutory obligation on Government to spend the minimum of 15 per cent of their revenue on health activities". The Central Council of health has recommended 10 per cent. In our State the percentage distribution is nearly 4 to 5 per cent of the total outlay for the Third Plan. The apparent reason obviously is non-availability of finances.

In 1936 our State of Orissa became a politically separate entity in the Indian Union and we have just celebrated the "Silver Jubilee" on the 1st of April this year. We have now a population of 1,75,65,645 (1961).

	Pre-plan 1950	End of 1st plan 1956	End of Second plan 1961	End of Third plan 1966
1. Population ..	14,588,000	15,023,000	17,565,645	19,836,967
2. Size of health plan (in crores)	...	0·73	4·34	7·49
3. Annual expenditure per capita on health services (in Rupees) (per capita allocattion at all India rate is Rs. 7/-) ..	0·48	0·69	1·25	...
4. Health personnel—				
Doctors ..	958	1266	1470	2085
Nurses ..	108	144	419	750
Pharmacists ..	420	476	542	832
5. Hospital beds	1218	1384	2329	3680
6. Medical Colleges ..	1	1	2	3
7. Annual admissions to				
(a) Medical Colleges ..	50	62	200	300
(b) Training Centres for				
(i) Nurses ..	30	48	42	100
(ii) Auxiliary Nurse-Midwives	..	...	135	120
(iii) Pharmacists ..	...	20	32	60
(iv) Midwives	...	26	185	120
8. Hospital and Dispensaries ..	456	487	555	575
9. Primary Health Centres ..	...	11	158 (proposed) 84 (opened)	307

The total number of available beds for treatment before the First Plan was 1218. By the end of First Plan it could be raised only to 1384, i.e., one bed for 10,600 population. In the Second Plan addition of 945 beds has been made. Thus the total comes to 2,329, that is one bed for 7,097 persons. In the Third Five Year Plan it has been proposed to increase the bed strength in the state by 1,200. Hence the total at end of Third Five Year Plan will come to 3,524 that is one bed for 5,390 persons, the target being 1 for 1,000 persons. With the meagre increase in bed strength it will not be possible to improve the hospital services during the Third Five Year Plan period. Actual position with regard to the health programme may now be considered as in table.

The birth rate seems to be on an increase. It was 25·35 per one thousand of the estimated mid-year population (1949-58) and it has gone up to 31·35 in 1959 for the State although death rate remains almost constant at 16·00. Infant mortality rate (per 1000 live ·birth) has gone down from 147·51 to 120·07 but this is highest in the district of Dhenkanal (Bhuban) where it records a figure of 227·27 (highest in India). Birth rate as recorded in 1959 is highest in Cuttack town and so also in Kalahandi district.

RURAL MEDICAL RELIEF AND SERVICE

New Medical Colleges are springing up every year but the number of doctors needed for the country are still deficient. One observes that the cities and towns are over-crowded by doctors whereas the rural areas do not have their due share. In our State of Orissa more than 400 posts for medical men are lying vacant. Attempts have been made to secure doctors on a large scale from other States in India but without much success. This clearly shows that medical men are not inclined to go to the rural areas. The same is true about para-medical staff. The common causes are : (1) Poor remuneration, (2) Lack of proper housing, (3) Lack of educational facilities for children, (5) Poor communication and (6) Inadequate facilities.

All these draw-backs cannot be remedied too quickly due to obvious economical conditions and general instability in the country.

Unfortunately all leadership has failed to persuade the modern doctors to move to the rural areas, by ideas of service, need of the country and in some cases even attraction by better remuneration.

MEDICAL EDUCATION

In the light of what is happening in other countries, it appears desirable that the pre-medical education should be continued in Science Colleges.

S. C. B. Medical College at Cuttack was established during pre-plan period by conversion of the Medical School into a college with 35 admissions. The number of annual admissions had been raised to 50 in the 1st plan and to 100 during the 2nd plan and with a view to meet the acute shortage of doctors 60 additional admissions have been done in 1959-60 and 50 additional admissions during 60-61. Besides, a medical college with 50 annual admissions has also been started at Burla from July, 1959.

At the beginning of Second Plan we had 8 doctors to a lakh of population as against 19 on all India basis. 78 in West Bengal and 33 in Bombay.

The requirement of doctors for the State is 3,093 on the basis of one for 5,000 population, i.e., target fixed to achieve at end of Second Five Year plan period. Now we have 1,470 doctors in the State, i.e., one per 10,500 population whereas whole India figure is 1 :6,000. Advance planning is necessary to meet the further shortage expected in the fourth plan period. Only 1,943 doctors will be available from the existing training facilities by the end of Third Plan leaving a shortage of 1,657. All over India for 1 million population there

L-R :—Dr. B. C. Bisal, Chairman of the Reception Committee; Dr. S. C. Das, The President of the Conference; Dr. M. V. Ramanayya, The Organising Secretary of the Conference; Dr. S. N. Gantayat, President of the Berhampore Branch, I.M.A.

are 13 admissions to Medical Colleges whereas in Orissa the average comes to nearly 9·8. In order to increase the man power of medical and health personnel of all categories, it is essential to put up immediately another Medical College here at Berhampur, upgrade the Medical College at Burla by raising the annual admission from 50 to 100 and introduce more post-graduate teaching in S. C. B. Medical College where post-graduate teaching in 7 subjects have been started from 1960. It may be said that when Burla has not been fully established and there is dearth of teaching personnel it is not advisable to start another Medical College in the State in near future, but the fact remains that such state of affairs will continue not only during Third Five Year Plan period but also in the fourth. I think with some adjustment and taking advantage of retired personnel it may be a practical proposition to start the Third Medical College during the 2nd year of the Third Five Year Plan for which all preliminaries should start from now. It is gratifying to note that people of Berhampur and Ganjam have generously offered to build hospital required for the Medical College and they are pressing for final selection of site and providing them with necessary plan. No time should be lost to finalise this matter and allow the teaching hospital construction committee to go ahead with the construction so that work could be completed by January, 1964 when 3rd Year Class will begin. With the present availability of accommodation, 1st year class can be started in 1962-63 provided all arrangements are immediately taken in hand. When the 3rd year class begins the hospital portion will be ready and the College can shift to the new site and building and construction of College portion may be taken up. This will fit into the plan programme. The shortage of doctors and para-medical staff will be quite heavy unless we take timely action. We have not taken advantage in First Five Year plan period to grasp the opportunity and let us not commit the same mistake now. There is a hue and cry in the country that some States have a good number of surplus doctors and they should be adjusted wherever there is deficiency but the fact remains that those surplus doctors do not like to come and serve in rural areas where there is lack of amenities, such as housing, educational facilities, easy communication etc. They also do not fit into the environment in which they are supposed to work. The only remedy in such circumstances is to train up our own boys and girls as quickly as possible and so long as proper staff to man the Health Centres and Dispensaries are not available it is better to consider deferring starting of new centres.

TRAINING OF INTERNEES

The present system of training of internees in S.C.B. Medical College, it seems is not very helpful to the internees and hence this period of internship is considered as waste. They could be profitably placed in a few District Headquarters Hospitals which should be upgraded so that they could get better opportunity to learn and do things by themselves and thereby a number of doctors could be spared to occupy other important vacant posts. In Great Britain after four and half years of undergraduate medical course, the students are given provisional registration for one year during which there is compulsory house-surgeonship. After satisfactory completion of paid house surgeonship permanent registration is granted. It is to be considered if the British pattern will be more desirable.

PARA-MEDICAL SERVICES

The wide gap between medical and para-medical personnel has not appreciably narrowed during the two plan periods. It seems we have made provision during the Third Plan Period for training of 460 para-medical personnel as against 300 doctors. In all advanced countries there are at least three para-medical personnel (Nurse, Midwife, Health Visitor and Health Inspector) for every qualified doctor and much of the work expected from doctors is carried out by them. Here the number of doctors being very low the number of Para-medical persons should be largest in proportion if elementary services are to reach the mass of the people in any adequate degree. In this connection I would like to mention that closure of compounders' training in different hospitals has been a great handicap, it should be allowed to continue till sufficient pharmacists are available. There is need for accelerated and sustained action as regards training for para-medical services. Attention should be given to the training of preventive aspects if our public health activities is to make significant progress.

COMMUNICABLE DISEASES

The health problem of Orissa is a problem of communicable diseases such as malaria, filaria, tuberculosis, smallpox and leprosy etc.

MALARIA

The spleen rate in children has considerably decreased and so also the hospital figures. N. M. C. P. was started in 1953 and converted to N. M. E. P. in 1958, surveilence phase is in operation now. Every body's help is required to eradicate malaria once for all. I. M. A. is ready and prepared to give all possible help to this national programme. I am glad to say that the same is being given.

FILARIA

The State of Orissa has the highest incidence of Filariasis in the Union. Both W. Malayi and W. Ban-

croft infections are prevalent in our State. The coastal belt has the highest infection rate nearly 10 to 15 per cent. Although at the initial stages there was need for separate programme for control of malaria and filaria, gradually there should be complete integration of malaria and filaria eradication and they should be brought under the integrated programme. Integration or at least co-ordination towards anti-mosquito programme and anti-larval measures are very necessary.

TUBERCULOSIS

This has become a major Public Health problem in the State, which is fast becoming industrialised. The effect of industrialisation is bound to reflect on the health of unguarded mass which has a virgin soil for the growth of deadly bacteria. B. C. G. Vaccination programme is being continued and nearly 20 lakhs of susceptible people have been vaccinated. This programme should be continued from year to year and there should be proper follow up of vaccinated persons. There are nearly 200 beds in different hospitals in the State for the treatment of tuberculosis patients. This is very inadequate and cannot meet the heavy demand for beds. There is proposal for putting up nearly 150 beds during the 3rd Five Year Plan period. This is highly inadequate. It should be increased to at least 500 beds. As the number of tuberculosis patients is growing day by day and treatment in hospitals is not possible due to acute shortage in beds, domiciliary chemotherapy has to be adopted as a necessity. The collaboration of the I. M. A. in giving domiciliary treatment in the State be explored.

PRIMARY HEALTH UNIT

The entire state will be covered by 307 Community Development Blocks with one Primary Health Centre in each i.e. there will be one Primary Health Centre for each 50,000 population. So far nearly 84 Primary Health Centres are actually functioning although our target was 158. Experience has shown that placement of these units under the Block Development Officer is not conducive to satisfactory working, because the Block Development Officer being a non-medical man cannot be expected to understand the problem of the doctor in-charge of the Health Unit. The population covered per unit should be smaller. There should be one doctor for not more than 10,000 population. The unit should cover 30,000 population with 2 doctors. Even this will not provide curative and preventive aspect to the desired standard unless supplemented by other methods. It may be explored to utilise the services of independent medical practitioners in the Health Centre area or adjacent places for rendering free medical aid to a limited number of poor people and also in School Health work, Family Planning and health services for pre-chool children. A co-operative effort of this kind has been started at Rourkella on our request where a few villages which are out of the way have been adopted by the members of I. M. A., Rourkela Branch. They go there twice a week and distribute medicine free of cost and render all medical, surgical aid possible. They also give prophylactic treatment free of cost. The scheme has been very encouraging and people from very distant places are flocking to the centre on foot and on bullock carts, well ahead of the time fixed. This "Adopted village" system should be taken up by all branches. I congratulate the members of the I. M. A. Rourkela Branch and also the German doctor members for the very keen interest they are taking to continue the scheme in their area. We thank the Government of Orissa for having placed a motor vehicle at the disposal of Rourkela Branch of I. M. A. for their biweekly visit to the adopted village.

RURAL WATER SUPPLY

Statistics showing the extent to which safe water supply has been provided in rural areas is not available. It was being done by different sources with no co-ordination and previously some conditions were imposed for grant of subsidy for drinking water wells. Rural water supply scheme should get top priority and it should be supplied without any condition imposed. Water supply is an essential necessity of life and it should be made available without any consideration and paying capacity of the consumers. Public Health Department should always be consulted in the matter before any decision is taken with regards to location, priority etc. It is desirable that the Public Health Engineering should be a part and parcel of Directorate of Health Services which should maintain plans of rural water supply scheme in a central place from where schemes should be expedited and their progress could be effectively followed. There should be greater liasion between the different authorities working towards improvement of the rural water supply. It should be borne in mind that unless and until there is closer contact between the different services such as the water supply and sewerage schemes, difficulty in carrying out the schemes will arise in the absence of such contact. Hence both water supply and drainage should be taken up as co-ordinated programme.

FAMILY PLANNING

Nearly 90 centres are now working in the State. It is growing in popularity amongst the middle classes. It has not yet touched the fringe of rural population who constitute 70 per cent of our population.

NUTRITION

Wherever you go in Orissa, you will come across numerous cases of nutritional deficiency. Some work is being done in some blocks in the State but this is not adequate. Vit. B_2 (Riboflavin) deficiency is rampant in the State. Productivity of labour in Orissa is low, it is 83 per cent in agriculture and 70 per cent in factory as compared to all India average. The health of labour has to be improved through scheme of health education, eradication and prevention of diseases. Question of nutrition particularly of younger age group should receive much more attention than hitherto.

IMPROVEMENT TO EX-DISTRICT BOARD HOSPITALS AND DISPENSARIES

Nearly 120 such institutions have been taken over from 1958. Their condition is not good and they are all situated in real rural areas and hence greater attention need be given to improve their condition.

INTEGRATION OF MEDICAL AND PUBLIC HEALTH SERVICES

Integration of health services is essential for better execution of health services. It has been done at the top and bottom in Primary Health Centres. It is desirable that it should be extended to other levels and different stations by stages.

The co-operation of independent medical profession should be sought on proper basis to carry out some of the items which need services of a large number of trained personnel such as school health services. Independent medical practitioners and I. M. A. should be subsidised for free medical service including preventive service.

INDUSTRIAL HEALTH

Due to availability of power and raw materials in the State, number of industries and factories are springing up. Orissa having numerous industrial potentiality, the entire State will be industrialised in near future. Although industrialisation will make headway to heavy

economical problems it is found that it will create a certain positive public health and social problems in the long run. Control of health hazards combined with a sound employees health education is very much necessary to reduce occupational illness. Occupational Health Division in the Health Directorate should be immediately established. Survey of air pollution, studies of dust and gaseous concentration level in mines and factories, the extent of environmental condition, biological effects on health of harmful substances to which a worker is exposed in his environment and investigation of urban and industrial air and water pollution are urgently required in occupational health field. Silicosis, the king of industrial diseases has got to be taken care of from now.

EMPLOYEES' STATE INSURANCE SCHEME AND CONTRIBUTORY HEALTH SERVICE SCHEME

Employees' State Insurance Scheme has been started in the State from 31st January, 1960 and the employees concerned in different factories number nearly 24,000. Service system has been introduced in this State. Six dispensaries are now functioning. Construction of a Cottage Ward of 50 beds is being taken up at Choudwar, our main industrial centre in North Orissa and construction of dispensary building with 6 to 10 detention beds are being taken up in other centres. A 12 bedded Tuberculosis Ward is also being provided at Choudwar. The scheme has almost passed the stage of teething trouble and is expected to cover more and more labour during the Third Five Year Plan period.

It is gratifying to note that arrangements are in hand to introduce contributory health service scheme in New Capital, Bhubaneswar, where the beneficiary and their family members will be nearly 32,000. The scheme provides many facilities which were not available to majority of Government servants.

ANOMALIES IN PAY PROPOSED BY ORISSA PAY COMMITTEE, 1960

The report of the Orissa Pay Committee, 1960 has just been out.

The Assistant Surgeon in Health Cadre starts at Rs. 250/- and reaches Rs. 540/- in the 13th year of Service whereas Assistant Surgeons in Public Health Cadre start at Rs. 370/- and reach Rs. 780/- in the 13th year of service. Compensatory Allowance for loss of private practice has been fixed in a graded scale of Rs. 75/- to 250/- p.m. When the scale of pay had to start at Rs. 175/- p.m., compensatory allowance was Rs. 135/- in order to equalise the pay with Public Health initial pay of Rs. 310/-. Then, when the initial pay was raised to Rs. 195/- in Medical Cadre, the compensatory allowance was reduced to Rs. 115/- in order to bring it to the level of Public Health initial scale. Now the initial pay in Public Health has been raised to Rs. 370/-. The compensatory allowance should have been Rs. 120/- instead of Rs. 75/- to start with. When private practice is stopped and Assistant Surgeons in Medical Cadre are required to do Public Health work in Community Project areas, they should get the same pay as in Public Health as per earlier decision of the Government. Moreover, instead of calling it an allowance it should be called compensatory pay, so that they will get the same privilege in pensionary benefit as their counterpart in Public Health Cadre. There is provision of selection grade but the percentage in the cadre has not been fixed. Pay scale will be more adversely effected when nearly 300 doctors will be recruited from the reserve cadre of West Bengal Government with all benefits, deputation allowance etc. There are nearly 500 doctors now in Government Service and 1470 registered Medical Practitioners in the State. I would humbly suggest that if the pay scale is increased with minimum amenities in rural area, then there may not be need to recruit doctors on foreign service rules having no control on their pay, prospects and promotions. As the term of reference did not extend to Class I Officers, the present pay scale will, to some extent, adversely affect the upper grade officers of Medical and Public Health Department. In order to remove anomalies which will crop up as a result of implementation of recommendation, the member Secretary and Sri R. C. Misra, Member Pay Committee have given a note and have suggested certain pay scales for Heads of Department in Medical and Public Health, Joint Directors, Civil Surgeons, Assistant Professors and Professor, Clinical and non-Clinical in Medical Colleges and pay of Principal of Medical Colleges. Their suggestion will not remove anomalies. The Joint Directors will not get full benefit of the scale because in the second round of promotion they secure appointment to the post of Joint Director and they can hardly expect to continue for four to five years and they cannot reach the maximum. The pay scale should be such that the incumbent gets full benefit of it. The pay scale of Civil Surgeons has been fixed very low and even less than the Additional District Magistrate's scale of pay. The Principal of Medical College will get less than the non-Clinical Professor. The Assistant Professors and Professors of Clinical subjects are in a disadvantageous position than the non-Clinical Assistant Professors and Professors when compensatory allowance is added to their pay; this will create more anomalies. It is better to adopt Government of India Scales of pay in Medical Colleges all over the country.

OUR ASSOCIATION

Let us recapitulate today what our foremost leaders of the profession had said on the eve of the Indian Medical Association's birth in 1928.

"The medical profession, on account of its disorganised condition is unable at the present moment to exert its influence which is its duty and its privilege to exercise. It has its duty towards the profession as well as towards the public and it must take its rightful place in shaping public opinion and guiding in the administration in a manner similar to that enjoyed by the profession in other centres".

This is true even today in our State. Membership of our Association is far from satisfactory. There are only 343 members on the roll. We are far behind other States in the Association activities. We must have to raise the standard of our Association and thereby help our parent body of I. M. A. to attain the position which in other countries it enjoys. Without attaining that stature we cannot discharge our duties to the profession and the people. In most of the foreign countries membership of the National Medical Association is obligatory; we have to reach that level. It is not only the professional necessity but also the country's necessity because national health demands the united efforts of the entire medical profession.

In conclusion let me commend to you in the matter of "Consolidation and cooperation" for the coming year. Consolidation by at least doubling our membership, cooperation by complete effacement of artificial barriers which divided us into Government servants, private practitioners, specialists, etc. Let us consolidate so that we can play our full part in building up our national health. Let us consolidate so that we can command the respect and consideration due to a great national organisation. Let us consolidate so that we can preserve and promote our legitimate interests."

The Annual Report of the Orissa State Branch of I.M.A. was presented by Dr. G. B. Mohanty, Honorary Secretary of the State Branch in the 13th Session of the Orissa State Medical Conference. It disclosed among others that Dr. John K. Duffy, an American audiologist and speech pathologist was the only distinguished visitor to the Branch and that he gave a course of lectures on

the subjects of audiology, speech pathology, speech and hearing therapy at the S. C. B. Medical College; and on the recommendation of the State Branch Dr. Sudarsan Misra, a member was selected for internship and that he would proceed to Canada in July 1961; that a deputation of the association approached the Government to represent their views regarding pay, status and remuneration of medical men, who have been feeling very much frustrated; that no refresher course has yet been started for the private medical practitioners in the State; that Dr. S. C. Das, Dr. N. Sahu and Mrs. N. Rath were elected to represent the I.M.A. in the State Health Council; that a Family Planning Exhibition was organised in co-operation and collaboration with the Regional Family Planning Centre; that besides forming a voluntary Medical brigade to render help in the worst affected areas in the devastating floods of 1960, an amount of Rs. 1,000/- was also contributed to the Orissa Flood Relief Fund and that the strength of the Branch is 344 from all the 18 Branches in the State, Cuttack standing first and Berhampur occupying the second place. The statement of accounts shows that the receipts amount to Rs. 5,359·49, out of which Rs. 1,843·71 covered the expenditure leaving a closing balance of Rs. 3,515·78 for the year 1959-60.

Out of 8 papers expected to be read in the Scientific Session of the Conference held at Berhampur on the 14th, only 4 doctors read their papers. Dr. U. C. Behra, on Rural Ophthalmology; Dr. N. C. Nayak, on (i) Experimental Protein and (ii) Ascitis and the Liver: a Clinico Pathological Study; Dr. Umesh Prasad Nayak, on (i) Alkaligenes, Faecalis as Pathogens with special reference to irregular fever and (ii) changing pattern of Tubercular Bacilli—now a days and Dr. G. B. Mohanty, on Radiology and the General Practitioner.

Resolutions Passed

The following resolutions were passed at the Conference:

1. The Conference condoles the sad demise of Dr. H. N. Jee, Assistant Professor of Anatomy and a member of the Indian Medical Association and resolves to sympathise with the bereaved family.

2. This Conference strongly feels that medical education particularly the undergraduate studies are gradually deteriorating and draws the attention of the Government for immediate improvement of the standard of medical education by equipping the different medical institutions with required number of staff and equipment.

3. This Conference views with concern the proposal of the State Government to appoint 300 doctors from West Bengal on higher scale of pay as that will surely lead to a general discontent and sense of frustration not only amongst the doctors already in service but also in freshly qualified doctors of the State. In view of the fact that not even half of the qualified doctors in the registration list of the Orissa Council of Registration are in State service and as the present scale of pay offered to the doctors is not attractive, this Conference urges upon the Government to recruit the private practitioners of the State even on temporary basis by offering a better and attractive remuneration before recruiting doctors from outside the State.

4. This Conference urges upon the Government that the proposed Medical College at Berhampur be started during the 3rd Five Year Plan period as committed by the Health Minister and the Director of Health Services, Orissa in a meeting called by them at Berhampur. The Conference further resolves that a copy of the resolution be sent to the Government of Orissa.

5. This Conference urges upon the Government that senior Medical Officers who are above 45 years of age now, be exempted from obtaining a post-graduate degree or diploma for further promotion.

6. Whereas the Medical Officers of Health are made responsible for the prevention of waterborne diseases, they have not been given the power of supervision for filtration, chlorination and proper supply of drinking water to the people, this being controlled by non-technical people. As the waterborne diseases are on increase, this Conference strongly urges upon the Government the desirability of entrusting the Medical Officers with full powers for efficient supervision and supply of safe water to the people and further urges that chemical and bacteriological examinations of the water supply should be done at least once every month and defects if any should be immediately rectified.

7. The State Government's scheme of 1959 to provincialise the L. F. Medical Services' has not yet been implemented. This Conference urges on the Government for implementation of the said scheme at an early date and thus remove the anomaly prevailing in the present cadre of ex-L.F. & D.B. Medical Officers.

8. This Conference is of opinion that steps should be taken for early implementation of the recommendations of the Health Advisory Council of the State. The inordinate delay experienced for implementation of any scheme to a large extent is due to non-technical persons in the Secretariat of the Health Department. This could be obviated by having the Director of Health Services as the ex-officio Secretary of the Health Department.

9. This Conference urges upon the Government that the age of superannuation for Medical Officers should be at 60 instead of 55 as at present, for the reasons of, dearth of doctors in the State, increased longevity of Indian life and fixation of maximum age limit at 28 for entry into the Medical Service.

10. This Conference strongly protests against the issue of Health Department Resolution No. 12609 H, dated 17-6-1960 fixing a limit to the scale of fee for private practice for the doctors in State Government Service for the reasons that:—

(i) Fixation of scale of fees was never in vogue before. (ii) The paying party has never ventilated any grievance on this issue. (iii) Government has never taken any responsibility for realising the fees of the doctor if they are not paid by the party. (iv) Increased cost of living has necessitated the increased rate of fees of doctor. (v) The service conditions of the Medical Officers have never mentioned any fixation of scale for their private practice. (vi) The exchange of fees between the doctor and the patient is purely a private affair in which Government's interference is not desirable.

11. This Conference urges upon the Government that due to increased value of the common commodities of living at present, the special allowances admissible to Medical Officers may be enhanced.

12. It is regrettable that out of 2,000 doctors in the State, only 344 doctors are the members of the Indian Medical Association. Thus this Conference makes an appeal to all the professional members of the State to enrol themselves as the members of Indian Medical Association. This Conference also requests the present office bearers of various local branches of the Indian Medical Association in the State to make a drive to enrol members in their respective jurisdiction.

13. This Conference urges on the present office-bearers of the State Branch of the Indian Medical Association to follow up all the resolutions which were being forwarded to the Government in the past years and take such necessary steps to see that the basis of the resolutions are properly respected by the appropriate authorities.

14. This Conference requests the Government that due to increased cost of living the present emoluments given to the pensioners of the Medical Service should be raised to a higher scale.

15. This Conference requests the Government that all certificates granted by a Registered Medical Practitioner to an individual for fitness, sickness, death and injury should be duly honoured.

16. As the condition of the vaccinators of this State has improved by offering decent salary to them, the

Government is requested to employ in future better candidates as vaccinators whose general educational standard is at least up to the Middle English Standard.

17. This Conference resolves that the Government be moved to give due consideration to the increased cost of drugs as a result of which cheaper treatment is not being available to the poorer section of the society.

18. In consideration of effective implementation of grow more food campaign and in view of menacing devastation caused to vegetables and food grains by monkeys, this Conference feels that the grow more food campaign should be sine-qua-non to destroy more monkeys in towns and other areas.

19. This Conference regrets to note that the present system of maintaining vital statistics is defective. Thus the Conference urges upon the Government to undertake suitable legislation to collect correct data of the birth and death rates in every town and village and to make the data uniform throughout the State.

BRANCH NOTES

ANAMALLAI BRANCH—A clinical meeting was held on 15-4-61 with Dr. M. K. R. Jayachandran in the chair. Dr. M. P. Gundappa gave an elaborate talk on Chronic Enlargement of Lymphatic Glands. There was a discussion on two cases of clinical interest presented by Dr. A. Sreenivasan. Arrangements for Annual Meeting Day celebrations in May were fully discussed.

The Annual meeting was held on 6-5-61 with Dr. N. S. Menon in the chair. After adoption of Annual Report and Statements of Accounts, the following office-bearers were elected for the ensuing year :—President—Dr. K. John; Vice-President—Dr. M. D. Dissawala; Hon. Secretary—Dr. M. P. Gundappa; Hon. Jt. Secretary—Dr. K. Janardhan.

After tea Dr. M. K. R. Jayachandran gave an interesting talk on Typhoid and its Management. The meeting terminated after dinner, entertainment and with vote of thanks.

A clinical meeting was held on 7-7-61 with Dr. K. John in the chair. Dr. M. D. Dissawala gave an interesting talk on Allergy and Serum Reaction followed by a refreshing discussion.

BAREILLY BRANCH—A film show was arranged by Glaxo Laboratories on 14-6-61. The following films were shown : The Story of Griseofulvin, the Story of Vitamin B_{12} and Poliomyelitis Vaccine. About 60 members attended.

A clinical meeting was held on 20-6-61. Dr. S. C. Srivastava of District Hospital, Bareilly, spoke on Various Aspects of Cardiac Failure. Mrs. A. H. Khan and S. Mitra took part in the discussion that followed. The speaker was thanked by the President. The meeting terminated after tea.

Earlier Dr. C. M. Aga acquainted the house about the emergent meeting of the State Branch called in connection with the U.P. government decision to grant registration to B.M.B.S. graduates.

A meeting of the Executive Committee was held on 28-6-61. Twelve members were present. The membership promotion sub-committee reported that it had forwarded 6 new names for enrolment and that more names were promised. It was decided to send a formal invitation to the State Secretary to hold the 1962 State Conference at Bareilly. The Secretary reported that Rs. 350/- had been collected for the family of late Dr. Y. P. Seth of Philibhit. He was authorised to send the amount to the State Secretary or to the family direct if he so instructed. The question of setting up a co-operative stores was brought and sponsors were asked to finalise their schemes for consideration later.

A clinical meeting was held on 13-7-61. Dr. C. M. Aga presided. At the outset a resolution condoling the death of Dr. A. Khan's father was adopted. Dr. Gharst of Ludhiana gave an instructive talk on Practical Orthopaedics. Dr. Chanan Singh and Dr. R. P. Srivastava took part in the discussion that followed.

At the meeting held on 25-7-61 under the presidency of Dr. P. C. Bhalla, Dr. Miss Ray Rani Tiwari gave an elaborate talk, illustrated with skiagrams and case demonstrations, on Malady of the Mitral Valve of the Heart. Major Narainum discussed the surgical aspect of the Rheumatic Heart, while Lt.-Col. Rao discussed the low economic status of the country and its role in Rheumatic Heart Disease.

A general meeting was held on 28-7-61. A condolence resolution on the sad death of the wife of Dr. M. Khan was passed. Election of President and Vice-Presidents of U.P. State and Centre were conducted. Delegates to the U.P. State Convention were nominated. The protest resolution passed by the U.P. State Branch on 15-7-61 was passed without alteration.

BHILAI STEEL PROJECT BRANCH—A symposium on Management of Comatose Patients was held on 6-7-61. The participants were : Dr. R. M. Grover (General Aspects), Dr. S. C. Shrivastava (Diabetic Coma) and Dr. M. M. Mukherjee (Hepatic Coma). It was followed by discussions when Dr. N. L. Kalle, Dr. D. C. Sen, and Dr. H. K. Desai expressed their views on the basis of this clinical experience.

CHICKMAGALUR BRANCH—A monthly clinical meeting was held at Birur on 16-7-61 arranged by Dr. M. Rajasekharappa and other doctors of Kadur taluk, Dr. B. S. Venkatraman Setty, District Surgeon, presiding. Twenty-five members were present. Dr. M. A. Hafeez, Physiotherapist, Victoria Hospital, Bangalore, the chief guest of the day, spoke on Low Back Pain. Dr. D. R. Govinda Rao, District Health Officer, spoke on Mycosis Fungoides. Dr. M. Rajasekharappa read a paper on The Place of Electrocardiography in Heart Disease. Many members took part in the discussion.

In the afternoon the members went to Kallathagiri waterfalls and visited Kurkanmatti coffee estate.

In the evening there was a pleasant variety entertainment by the children of Sishu Vihar, Birur, followed by a film show Haemorrhoids and Early Detection of Rectal Cancer and Rehabilitation of Bronchial Asthma, provided by Warners.

The function ended with vote of thanks to Dr. M. Rajasekharappa.

SHILLONG BRANCH—A combined clinical and general meeting of the branch was held on the 13th May, 1961 at the Welsh Mission Hospital, with president of the branch Dr. R. A. Hughes in the Chair. Thirtyseven members were present.

Clinical—Symposium on Peptic Ulceration and its complications. Dr. R. A. Hughes reviewed recent theories on the aetiology of peptic ulceration and the bearing of this on surgical and medical treatment. The complication of haemorrhage was then considered, and emphasis was placed on blood replacement, when available and early operation, especialy in older age groups, before a stage of irreversible change in the biochemistry of the blood has been reached, with hypotension failing to respond to any treatment. Dr. P. A. Shave then discussed the complication of perforation, with reference to a series of eight cases treated in the past year at the hospital. Emphasis was placed on early diagnosis followed by immediate operation. The poor prognosis in cases diagnosed after forty eight hours was contrasted with the excellent prognosis in those diagnosed and operated upon within twelve hours of perforation. The clinical picture in typical and atypical cases in the series was presented.

General—Nominations for presidentship and vice-presidentships for I.M.A. Centre, were made.

The report of the Sub-Committee for consideration of Government Contributory Health Service Scheme, appointed at the General meeting of 4th February 1961, was considered. It was resolved that the said Sub-Committee with the new president and secretary be authorised to finalise the proposals, and submit the outlines of a scheme to the Government.

SHIMOGA BRANCH—The clinical meeting of the branch was held at the Guest House, Bhadravathi at 6 P.M. on 21-5-1961 under the chairmanship of Dr. Kantharaju. Dr. H. Narayana Rao, addressed on Recent Advances in Diagnosis and Management of Pulmonary Tuberculosis.

TARAKESWAR BRANCH—An ordinary general meeting was held on 14-5-61 at the Tarakeswar Hospital premises. Twenty-one members attended. Dr. S. N. Mukherjee presided. At the beginning homage was paid to the Great Poet Rabindra Nath Tagore on his centenary. Two Rabindranath's songs were sung by Srimati Shibani Bagchi. Manifold activities of the poet were narrated by Drs. R. K. Goswami, H. S. Datta and S. N. Mukherjee.

Opening of a Family Planning Clinic in Tarakeswar if government grant was available, was discussed in detail by the secretary and others, and it was unanimously supported by all the members. Dr. H. S. Datta delivered a Refresher Course type of lecture on Diabetes in all its aspects. Dr. P. Nayek added, in a short lecture Diabetes in Pregnancy. In the discourse many of the members took part.

TENALI BRANCH—A meeting was held in Chandra Mouli Hall on 24-12-60 at 5-30 P.M. with Dr. B. Suryanarayana Sastry in the chair. Dr. Y. R. Reddi, Paediatrician, Guntur General Hospital dealt at length with causes and treatment of vomiting and diarrhoea in children. Next, Dr. P. Siva Reddi, Professor of Ophthalmology, Gandhi Medical College, spoke about some common eye disorders and mentioned some important causes of blindness which can be prevented and about their treatment.

A meeting was held in C. B. C. Nursing Home at 5-30 P.M. on 5-3-61 with Dr. S. N. Sastry in the chair. The chief guest of the evening Dr. K. G. Krishnaswamy, Dean, Madras Medical College spoke about the need for early diagnosis of cancer, and evaluated the various methods of treatment now available.

A meeting was held in the Chandra Mouli Hall on 11-3-61 at 6 P.M. with Dr. B. S. Sastry in the chair. After reading of minutes of last meeting, a case of Extra-uterine Pregnancy was demonstrated by Dr. K. Veeraiah. Dr. B. V. Narasimha Rao spoke about a case of Mumps complicated by Pancreatitis. The case was discussed. Then Dr. J. S. R. Sarma, Venereologist, Government Hospital, Guntur, lucidly explained the various kinds of venereal diseases and their treatment. He stressed the epidemiological point and also the need of treatment of both sexes. He also spoke about the need of educating the patients and public about the prevention and treatment of venereal diseases. This was followed by a film show on Diabetes.

Under the joint auspices of the Red Cross Society, and Tenali Branch IMA the World Health Day was celebrated on 7th April 1961. In the morning, pamphlets regarding accidents and their prevention were distribnted by the secretaries Mr. R. Rami Reddi and Dr. B. Pullaiah in the nearby villages, Pedaravnru, Zampani and others. In the evening, a meeting was held in premises of the Taluk Higher Secondary School at 6-30 P.M. under the presidentship of Dr. B. S. N. Sastry. The President dealt with various types of accidents, namely, roadside, industrial, electrical and others. He also dealt with various types of poisons which may accidentally be taken. He spoke at length about their prevention also. Next, Dr. J. Reddi spoke on Poliomyelitis which is now the topic of the day especially in Guntur and Krishna Districts. After a short introduction about the World Health Organisation and also its various activities in relieving the suffering of people all over the world, the speaker took up the subject of Anterior Poliomyelitis. He dealt at length various aspects of it, namely, aetiology, pathology, signs and symptomatology and treatment including prevention with demonstrations by means of slides and photographs.

A meeting was held on 28-5-61 at 6-30 P.M. in Chandra Mouli Hall with Dr. B. S. N. Sastry in the chair. The minutes of the last two meetings were read and passed. The President then gave a short sketch of Dr. M. V. Subba Rao of Duggirala who expired on 22-4-61. The members condoled his sad and sudden death, conveyed its heartfelt condolences and sympathy to the bereaved family. The following films were then screened : 1. Active Management of Third Stage of Labour, 2. Recent Advances in Cardiology, 3. Migraine, Recent Advances in x-ray Cinematography, 4. Surgical Closure of the Atrial Septal Defect.

TRIPURA BRANCH—A meeting of the branch held on 27-5-61 mourned the sudden demise of a very enthusiastic and sincere member Dr. N. K. Bhattacharjee on 10-5-1961 while he was examining patients in his chamber. The branch suffered an irreparable loss by the death of Dr. Bhattacharjee and deeply sympathised with the bereaved family members.

U.P. BRANCH—An emergent meeting was held on May 27, 1961 at 4-00 P.M. at the residence of Dr. R. N. Gupta. Sixteen doctors were present. Dr. Bholanath, the Immediate Past-President was elected to preside over the meeting.

The Committee considered the G.O. No. 4257-A/V-1700/61 dated May 18, 1961 regarding the amendment of the schedule of registration, under U.P. Medical Registration Act of 1917 to enable persons holding the degree of M.B.B.S., to be included in the schedule.

The Working Committee, after long discussion, decided that the steps proposed by the Government is illegal, illogical and wrong. It was further decided that a memorandum to this effect be submitted to the Government and the members of the U.P. Medical Council expressing the views of the Association and a deputation of local members should wait on the Chief Minister to discuss and clarify the retrograde step that the Government is intending to take.

XX BENGAL STATE MEDICAL CONFERENCE, 1961, BARRACKPORE

The 20th Bengal State Medical Conference will be held at Barrackpore on September 23-24,1961 Dr. H. K. Roy, President of the Indian Medical Association, Bengal State Branch will preside over the Conference. The Silver Jubilee celebration of Barrackpore Branch, I.M.A. will be held along with the Conference.

XII M. P. STATE MEDICAL CONFERENCE, 1961, GWALIOR

The 12th Madhya Pradesh State Medical Conference will be held in the G. R. Medical College, Gwalior on October 21-23, 1961. The Governor of the State, Shri H. V. Pataskar, will inaugurate the conference. Further information may be had from Dr. B. S. Kale, Organising Secretary of the Conference, Sriniketan, Nai Sarak, Lashkar, Gwalior.

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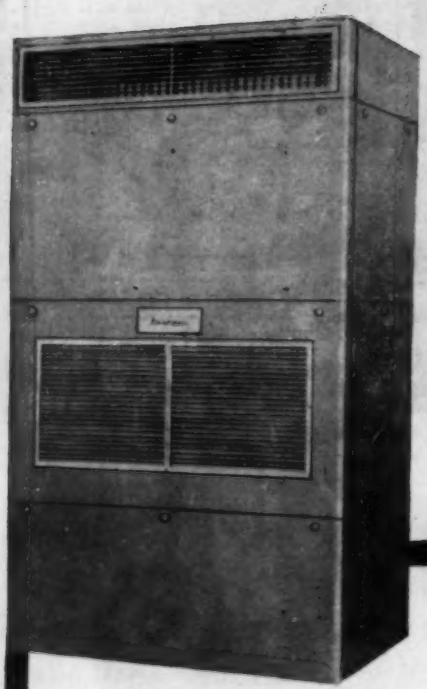

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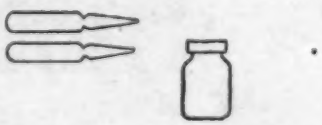

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